Nutrient Managements Plan (NMP)
Noo Sun Dairy

Purpose: To provide the site specifications necessary to properly utilize manure generated on the Noo Sun Dairy owned and operated by Mitch Hancock, and to prevent the degradation of soil, water, air, plant, and animal resources. To meet the objectives of the dairy, get the most value from their manure, and to stay in compliance with current state and national regulations.

Farm/Facility: Noo Sun Dairy
2118 N 6000 West
Corinne, UT 84307

Owner Operator: Mitch Hancock

Farm Headquarters Latitude and Longitude: 41 32' 39.07" N, 112 09' 29.42" W, on-site office.

Plan Period: March 2016 to March 2021

Watershed: 106010204

Receiving Water: Sloughs on J.Y. Ferry and Sons

Certified Conservation Planner

I certify that I am a Natural Resources Conservation Service (NRCS) approved certified planner qualified to review and approve nutrient management plans (NMPS) for compliance with NRCS NMP planning practices and NRCS standard practices. I certify that the NMP developed for the facility submitting this NOI for permit coverage complies with parts VII, VIII, IX, XI and XII of the CAFO permit and all applicable NRCS practice standards, including Practice 590 UMARI. The NMP, if fully implemented, will be in accordance with all NMP permit requirements and all applicable NRCS practice standards for the facility.

I approve the nutrient management plan for the facility seeking permit coverage under this NOI.

Signature: _____ Date: 8-12-17
Name: Howard Nyagaya
Title NRCS Certified Planner Certification Credentials:

Owner Operator

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed this system, or those persons directly responsible for gathering the information, the information submitted to us, is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine or imprisonment for knowing violations.

Signature: _____ Date 8/14/2017

Name: Mitch Hancock

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Pd. 110.00 8-30-17

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Section 1 Background site information

1.1 General Description of Operation

The Noo Sun Dairy is located in Central Box Elder County southwest of Corinne. The land is relatively flat with good soil. The operation grows a significant portion of the feed for their dairy operation on lands owned and leased by the operation.

Manure from the dairy is applied to approximately 540 acres of cropland. Waste water is applied through surface ditches to most of these same acres.

The Noo Sun Dairy has the capacity for 2,000 lactating dairy cows. There are currently storage facilities for the solid manure that is produced and the milk house water is flowing into the storage bunker with the solids.

Section 2 Resources concerns and Management

2.1 Soil Quality Concerns,

Soil Quality Concern	Activities to Address Concern
Ephemeral Gully Erosion	Not a concern
Gully Erosion	Not a concern
Sheet and Rill Erosion	Not a concern
Stream/Ditch bank Erosion	Not a concern
Wind Erosion	Plant cover crops after corn harvest
Nutrient Management	Follow recommendations of NMP
Acres Available for Manure Application	540 acres of cropland

2.2 Water Quality Concerns

Water Quality Concern	Activities to address Concern
Facility Waste Water Runoff	Maintain dikes and ditches to prevent run on.
Manure Runoff (Field Application)	Maintain dikes and winter dams to prevent runoff into streams
Manure Runoff Production Area	Maintain existing ditches and enclosures
Nutrients in Ground Water	
Nutrients in Surface Water	
Silage Leachate	
Fields with Excess Nutrients	Check soil tests to determine application
Tile Drained Fields	Incorporate manure into soil to limit seepage into drain fields
100 Year Floods	
Run-on	Maintain dikes and ditches to prevent run on
Grazing	
Water Source Protection	

2.3 Other Concerns

Other Concerns	Activities to Address Concern
Aesthetics	
Maximize Nutrient Utilization	
Minimize Nutrient Costs	
Neighbor Relations	
Profitability	
Soil Compaction	
Time Available for Manure Application	
Odors	
Air Quality	
Dust Control and Wind Borne Manure	
Biosecurity	

2.4 Maps and Areas of Concern

There are no imminent areas of concern for this facility. The issues relate to easier management of waste materials for the convenience of the operator during high rain fall events and winter storage concerns.

Section 3 Production Area Effluent Limitation Guidelines

3.1 Production Area Map,

3.2 Generation Storage and Transfer of Manure and wastewater

Generation:

This plan is based on manure quantity and nutrient content estimates generated from NRCS guidelines for the animal type, waste production values, and number of animals. These estimated values account for typical storage, volatilization, denitrification, and mineralization losses based on the proposed methods of handling the manure. With the planned expansion to 2,000 mature dairy cows, approximately 28,664 tons per year of fresh manure will be produced (see attached Animal Manure Nutrient Balance Worksheet for additional information). Compost is used to bed all of the animals with the exception that calves will be bedded with straw until moved to the calf facility at the feedlot.

Manure is scraped and stored in solid manure structures until after crops are harvested. Storage facilities are large enough to store all of the solid manure that is produced for a period of 150 to 180 days. Manure is applied to approximately 546 acres of farm land.

Storage

Liquid manure water is stored in two lagoons; the North Lagoon, 300' X 600'X2.5' has a capacity of 450,000 cu/ft (3,330,000 gallons) and the South Lagoon, 200'X600'X2.5', with a storage capacity of 300,000 cu/ft (2,220,000 gallons). This is a total of 750,000 cu/ft (5,550,000 gallons). There are also three concrete solid storage facilities with a total of 330,800 cu/ft or 2,447,920 gal. The total available storage is 7,997,920 gallons. The 2,000 lactating dairy cows will produce approximately 10 gallons of waste water per animal per day to be stored in the lagoon. The lagoon needs to accommodate 150 days of storage or 150 days x 20,000 gallons or 3,000,000 gallons.

The estimated area of the hard-surfaced drainage around the lagoon is 181,000 sq ft. Careful diversion of all clean water will improve the operation of the lagoon and ensure compliance with the terms of the permit.

A 25-year storm event (2.5 inches) will produce about 37,733 cu/ft of water or 279,226 gallons of additional runoff. With the estimated production of 3,279,226 gallons and the capacity of 7,997,920 gallons, the available freeboard will be 15 inches.

Collection/Transfer:

The manure will be scraped daily from the corrals and walkways into the solid waste structures. The solid manure from open corrals also contains some straw bedding material. Solid manure will be hauled from the storage structures directly to the composting area when conditions are appropriate. During other times, solid manure will be hauled as needed from the storage structures to a manure staging area, where it will be stored until conditions are appropriate for composting land application. Manure, compost, or wastewater transfers to other users will be recorded and included on the manure transfer forms to be submitted to DWQ an annual basis for each recipient of manure.

All liquid storage facilities are evaporative. What liquid is not evaporated is used to irrigate crops downstream from the site, to dairy owned crops.

The milk house is currently washed after every milking to clean up the facility. The milk house wash water and liquid manure will be piped into the storage bunker. Only chemicals approved for dairy use in cleaning and disinfection will be allowed to enter the storage tank.

Map 3.1 A production area details

old
John Noyes Dairy
Now Mitch Hancock

Separation pond 80 ft x 40 x 4
+ manure pad – 80 ft x 40 x 8
80 ft

1 N Lagoon 550' x 275' wide 3.5 ft w/ 1 ft freeboard
2 L lagoon 625' x 190' wide " "

DS MP 1 350' x 90' x 4' dep
DS MP 2 140' x 80' x 4' "
Compost 800 x 130 Composting area.
Dry Lot 2.5 acres (4 months 300 animals Lactating)

Last Dairy Cows 2,000 1400 lbs

Animal Waste Management Plan Report

prepared for Noo Sun

Designed By: JHR

Date: 3/3/2015

Checked By: _____

Date: _____

Farm Information

# of Operating Periods: 1 **State:** UT **Data Source:** NRCS-2008

Operating Period: January - December

Climate Data

County: Box Elder

Station: CORINNE UT1731

25 Yr - 24 Hr Storm Event: 2.6 inches

Lagoon Loadings:

Rational Design Method:

Barth KVAL: 0.5

Load Rate for Odor, OCV: 0.00378 lbs VS/cu. ft/day

LRV Max: 0.00625 lbs VS/cu. ft/day

NRCS Design Method:

Anaerobic Load Rate: 4.5 lbs VS/1000 cu. ft/day

Month	Prec. (in)	Evap. (in)
January	1.42	0.73
February	1.56	1.17
March	1.63	2.38
April	1.79	4.01
May	1.91	5.92
June	1.34	7.36
July	0.77	8.61
August	0.89	7.42
September	1.63	4.90
October	1.64	2.85
November	1.59	1.25
December	1.55	0.72
Total	17.72	47.32

Animal Data

Animal	Type	Quantity	Weight	Manure	VS	TS	Manure	Manure	VS	TS
			lbs	cu.ft/day/AU	lbs/day/AU	lbs/day/AU	cu.ft/day	lbs/day	lbs/day	lbs/day
Milker(100lb M	Dairy	2000	1400	1.90	12.00	15.00	5320.00	319200.0	33600.00	42000.00
Totals		2000	N/A	N/A	N/A	N/A	5320.00	319200.0	33600.00	42000.00

Location Data

Percent of Manure Deposited in Each Location:

Period 1

Parlor	Animal Name	Percent Manure
	Milker(100lb Milk)	24
Pen	**Animal Name**	**Percent Manure**
	Milker(100lb Milk)	38
pen 2	**Animal Name**	**Percent Manure**
	Milker(100lb Milk)	38
Totals	**Animal Name**	**Percent Manure**
	Milker(100lb Milk)	100

Additions Data

Waste Water VS Loading: 12.9

Operating Period: 1

Location	Wash Water	Flush Water	Bedding	Amount
	gal/day	gal/day		lbs/day
pen 2	0.00	0.00	Composted Manure	10000.00
Parlor	64000.00	0.00		0.00
Pen	0.00	0.00	Composted Manure	10000.00

Runoff Data

Runoff Volume Method: Calculate Monthly Runoff Volumes with AWM

Pervious Watershed Area: 7 acres

Pervious Curve Number Storm: 75

Pervious Curve Number Monthly: 90 (1 day), 77 (30 day)

Impervious Area: 1000 sq. ft

25 Year Pervious: 18030.00 cu. ft

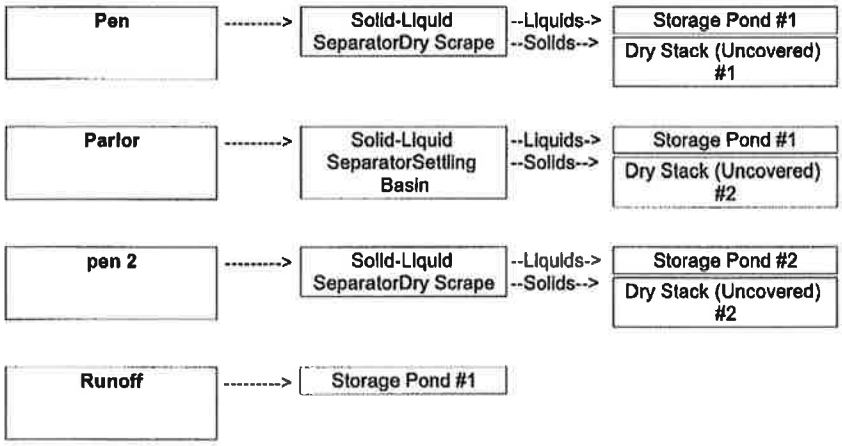
25 Year Impervious: 200.00 cu. ft

25 Year Total: 18230.00 cu. ft

Runoff Volumes (1000 cu. ft.)

Month	Pervious	Impervious	Month Total
January	4.56	0.08	4.64
February	6.01	0.09	6.10
March	6.79	0.10	6.89
April	8.71	0.11	8.82
May	10.25	0.12	10.37
June	3.80	0.07	3.87
July	0.25	0.03	0.28
August	0.68	0.04	0.72
September	6.79	0.10	6.89
October	6.91	0.10	7.01
November	6.34	0.09	6.43
December	5.90	0.09	5.99
Total	66.99	1.00	67.99

Management Train



Facility Volume Data

Operating Period 1

Facility	Manure	Wash Water	Flush Water	Bedding	Total Vol
Dry Stack (Uncovered) #2	418.47	0.00	0.00	166.67	585.14
Storage Pond #2	2021.60	0.00	0.00	0.00	2021.60
Dry Stack (Uncovered) #1	290.18	0.00	0.00	166.67	456.85
Storage Pond #1	3298.40	8555.56	0.00	0.00	11853.96

Waste Facilities

Dry Stack (Uncovered) #1

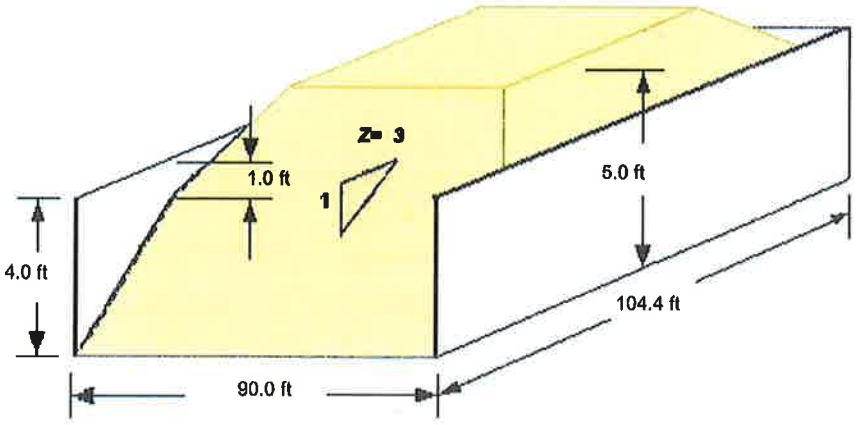
Max. Storage Vol. Method: Storage Volume

Storage Months: 3 months **Critical Months:** Nov - Jan

Design Dimensions

Shape:	Rectangle	**Top Length:**	83.4 ft	**25Yr24Hr Storm Depth:**	
Sideslope:	3:1	**Bottom Length:**	104.4 ft	**Prec Minus Evap Depth:**	
Storage Depth:	5.0 ft	**Top Width:**	78.0 ft	**Volume Required (Wastes):**	42030 cu. ft
Freeboard:	1.0 ft	**Bottom Width:**	90.0 ft		
Wall Height:	4.0 ft	**Bot Dimensions**	90.0 x 104.4 ft		
		TopDimensions:	78.0 x 83.4 ft		

Design Quantities



Water Budget (1000 cu. ft.)

Month	Runoff	Withdrawal	Waste	Prec - Evap	Ext Prec	CumStorageVol
January	0	☐	14.16	0.00	0.00	14.16
February	0	☐	13.25	0.00	0.00	13.25
March	0	☐	14.16	0.00	0.00	14.16
April	0	☐	13.71	0.00	0.00	13.71
May	0	☐	14.16	0.00	0.00	14.16
June	0	☐	13.71	0.00	0.00	13.71
July	0	☐	14.16	0.00	0.00	14.16
August	0	☐	14.16	0.00	0.00	14.16
September	0	☐	13.71	0.00	0.00	13.71
October	0	☐	14.16	0.00	0.00	14.16
November	0	☐	13.71	0.00	0.00	13.71
December	0	☐	14.16	0.00	0.00	14.16

Dry Stack (Uncovered) #2

Max. Storage Vol. Method: Storage Volume

Storage Months: 3 months **Critical Months:** Nov - Jan

Design Dimensions

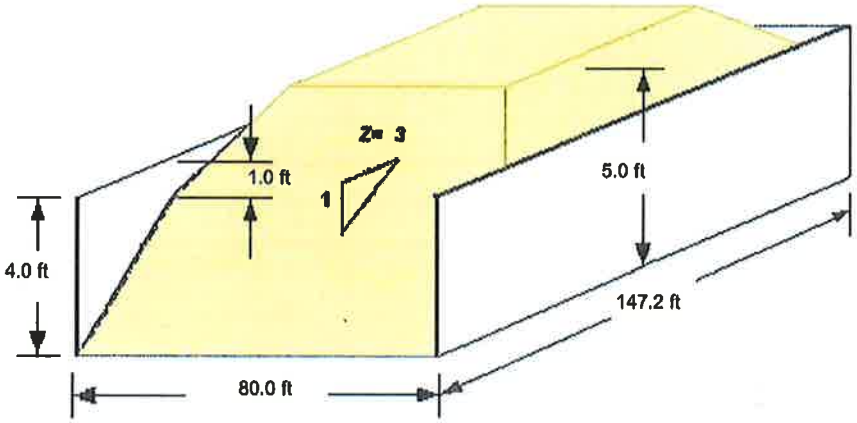
Shape:	Rectangle	**Top Length:**	126.2 ft
Sideslope:	3:1	**Bottom Length:**	147.2 ft
Storage Depth:	5.0 ft	**Top Width:**	68.0 ft
Freeboard:	1.0 ft	**Bottom Width:**	80.0 ft
Wall Height:	4.0 ft	**Bot Dimensions**	80.0 x 147.2 ft
		TopDimensions:	68.0 x 126.2 ft

Design Quantities

25Yr24Hr Storm Depth:

Prec Minus Evap Depth:

Volume Required (Wastes): 53833 cu. ft



Water Budget (1000 cu. ft.)

Month	Runoff	Withdrawal	Waste	Prec - Evap	Ext Prec	CumStorageVol
January	0	☐	18.14	0.00	0.00	18.14
February	0	☐	16.97	0.00	0.00	16.97
March	0	☐	18.14	0.00	0.00	18.14
April	0	☐	17.55	0.00	0.00	17.55
May	0	☐	18.14	0.00	0.00	18.14
June	0	☐	17.55	0.00	0.00	17.55
July	0	☐	18.14	0.00	0.00	18.14
August	0	☐	18.14	0.00	0.00	18.14
September	0	☐	17.55	0.00	0.00	17.55
October	0	☐	18.14	0.00	0.00	18.14
November	0	☐	17.55	0.00	0.00	17.55
December	0	☐	18.14	0.00	0.00	18.14

Storage Pond #1

Max. Storage Vol. Method: Storage Volume

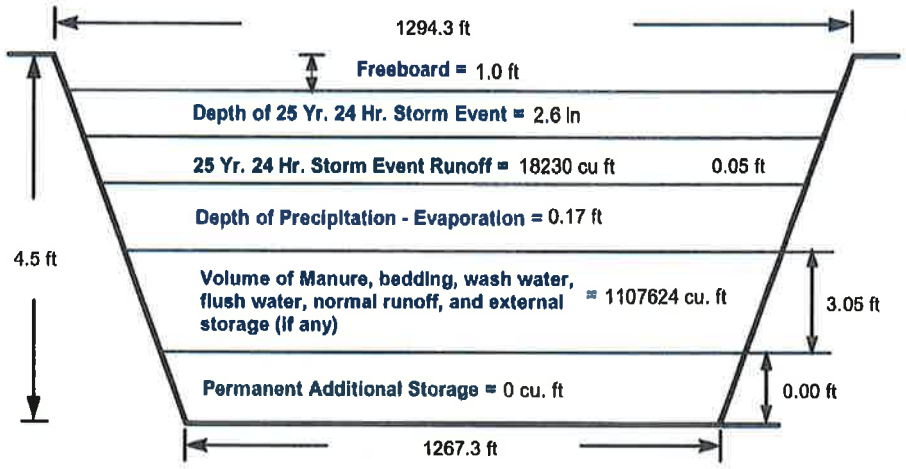
Storage Months: 3 months **Critical Months:** Nov - Jan

Design Dimensions

Shape:	Rectangle	**Top Length:**	1294.3 ft
Sideslope:	3:1	**Bottom Length:**	1267.3 ft
Storage Depth:	3.5 ft;	**Top Width:**	302.0 ft
Freeboard:	1.0 ft	**Bottom Width:**	275.0 ft
		Bot Dimensions	275.0 x 1267.3
Permament Additional Storage	0.00 ft	**TopDimensions:**	302.0 x 1294.3

Design Quantities

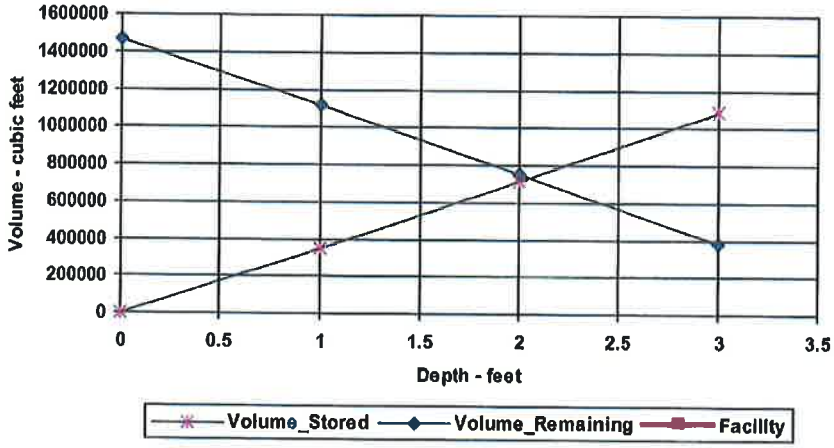
25Yr24Hr Storm Depth:	2.6 in
Prec Minus Evap Depth:	0.17 ft
Volume Required (Wastes):	1107624 cu. ft



Water Budget (1000 cu. ft.)

Month	Runoff	Withdrawal	Waste	Prec - Evap	Ext Prec	CumStorageVol
January	4.64	☐	367.47	24.05	0.00	396.17
February	6.10	☐	343.76	15.23	0.00	365.10
March	6.89	☐	367.47	-19.28	0.00	355.08
April	8.82	☐	355.62	-63.64	0.00	300.80
May	10.37	☐	367.47	-117.81	0.00	260.03
June	3.87	☐	355.62	-180.17	0.00	179.32
July	0.28	☐	367.47	-236.75	0.00	131.00
August	0.72	☐	367.47	-196.65	0.00	171.54
September	6.89	☐	355.62	-95.92	0.00	266.59
October	7.01	☐	367.47	-33.25	0.00	341.23
November	6.43	☐	355.62	13.78	0.00	375.83
December	5.99	☐	367.47	28.59	0.00	402.06

Stage Storage Curve



Storage Pond #2

Max. Storage Vol. Method: Storage Volume

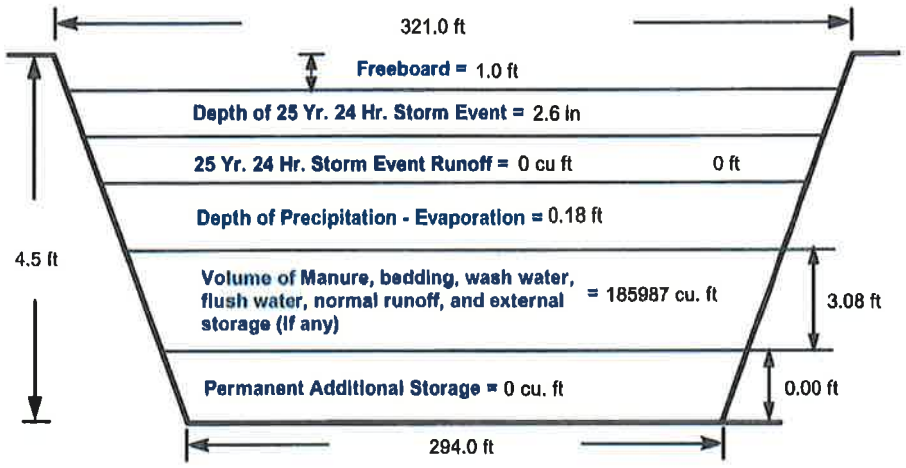
Storage Months: 3 months **Critical Months:** Nov - Jan

Design Dimensions

Shape:	Rectangle	**Top Length:**	321.0 ft
Sideslope:	3:1	**Bottom Length:**	294.0 ft
Storage Depth:	3.5 ft;	**Top Width:**	217.0 ft
Freeboard:	1.0 ft	**Bottom Width:**	190.0 ft
		Bot Dimensions	190.0 x 294.0 ft
Permament Additional Storage	0.00 ft	**TopDimensions:**	217.0 x 321.0 ft

Design Quantities

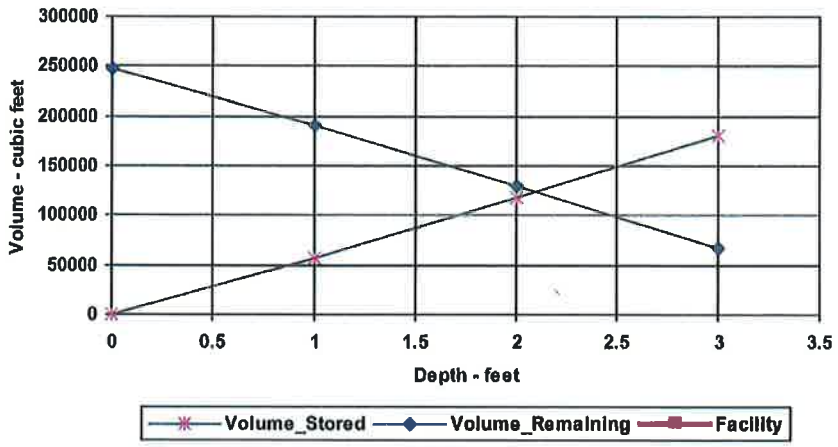
25Yr24Hr Storm Depth:	2.6 in
Prec Minus Evap Depth:	0.18 ft
Volume Required (Wastes):	185987 cu. ft



Water Budget (1000 cu. ft.)

Month	Runoff	Withdrawal	Waste	Prec - Evap	Ext Prec	CumStorageVol
January	0	☐	62.67	4.52	0.00	67.19
February	0	☐	58.63	3.09	0.00	61.72
March	0	☐	62.67	-2.67	0.00	60.00
April	0	☐	60.65	-10.05	0.00	50.60
May	0	☐	62.67	-19.08	0.00	43.59
June	0	☐	60.65	-29.73	0.00	30.92
July	0	☐	62.67	-39.41	0.00	23.26
August	0	☐	62.67	-32.65	0.00	30.02
September	0	☐	60.65	-15.51	0.00	45.14
October	0	☐	62.67	-5.01	0.00	57.66
November	0	☐	60.65	2.86	0.00	63.51
December	0	☐	62.67	5.33	0.00	68.00

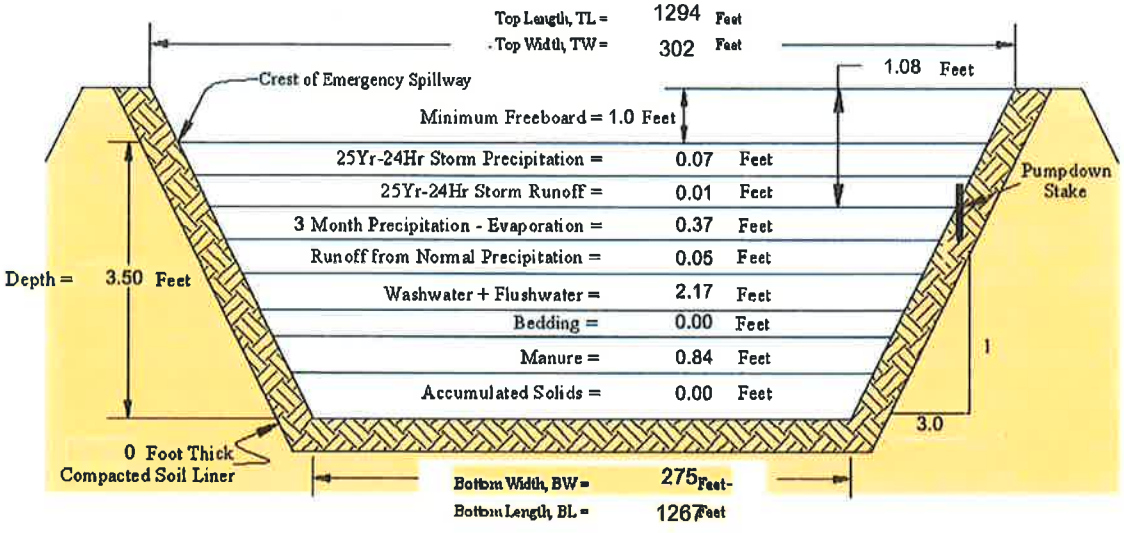
Stage Storage Curve



AWM
Waste Storage Pond Data for: Noo Sun

Designed by: JHR

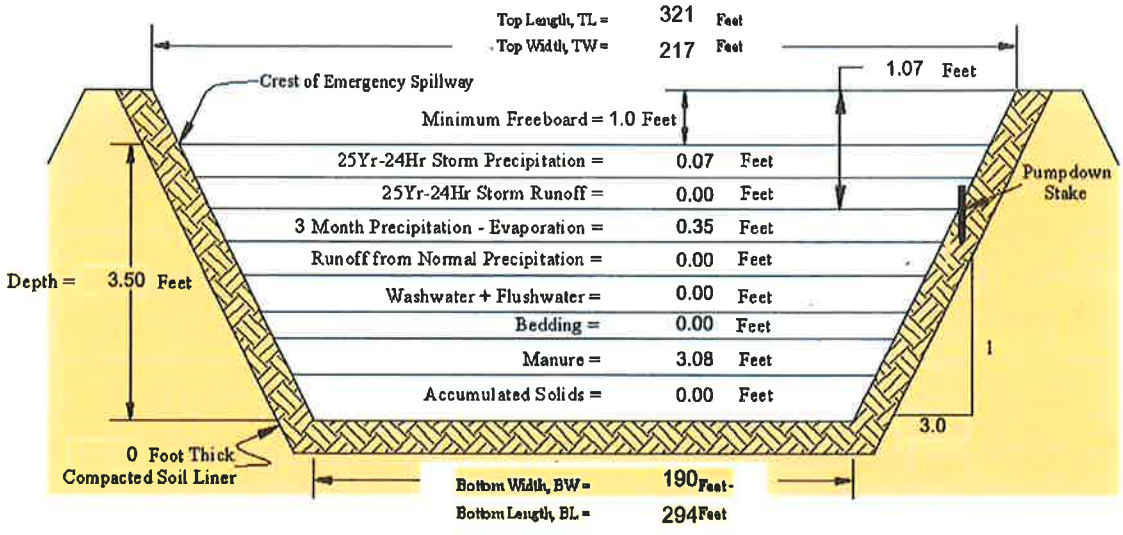
Facility	**Rectangular Storage Pond #1**			
Storage Period	3	*Months*		
Manure & External Effluent	303,453	*Cubic Feet*	2,269,828	*Gallons*
Bedding	0	*Cubic Feet*	0	*Gallons*
FlushWater	0	*Cubic Feet*	0	*Gallons*
WashWater	787,111	*Cubic Feet*	5,887,590	*Gallons*
Runoff from Drainage Area				
25Yr-24Hr Storm	18,230	*Cubic Feet*	136,360	*Gallons*
Normal Rainfall	17,060	*Cubic Feet*	127,609	*Gallons*
Rainfall on Pond Surface				
25Yr-24Hr Storm	84,690	*Cubic Feet*	633,484	*Gallons*
Normal Rainfall minus Evaporation	66,426	*Cubic Feet*	496,870	*Gallons*
Accumulated Solids	0	*Cubic Feet*	0	*Gallons*
Design Operating Volume ..	1,174,050	*Cubic Feet*	8,781,897	*Gallons*
Total Storage Volume	1,276,971	*Cubic Feet*	9,551,741	*Gallons*
Ramp Volume (if applicable)	0	*Cubic Feet*		
Structural Volume (includes effects of ramp if present)	1,663,072	*Cubic Feet*		



AWM
Waste Storage Pond Data for: Noo Sun

Designed by: JHR

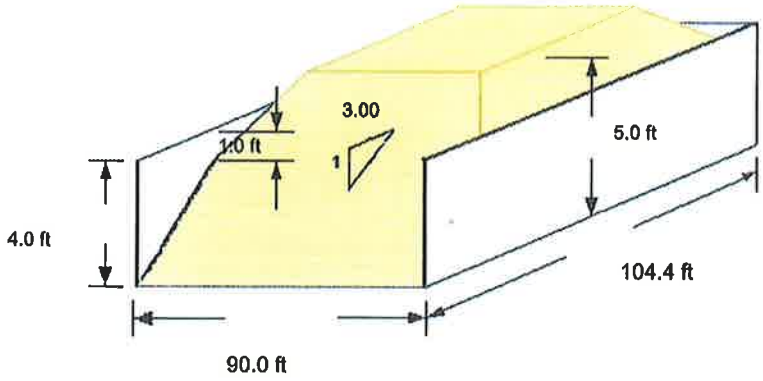
Facility	**Rectangular Storage Pond #2**			
Storage Period	3	**Months**		
Manure & External Effluent	185,987	**Cubic Feet**	1,391,183	**Gallons**
Bedding	0	**Cubic Feet**	0	**Gallons**
FlushWater	0	**Cubic Feet**	0	**Gallons**
WashWater	0	**Cubic Feet**	0	**Gallons**
Runoff from Drainage Area				
25Yr-24Hr Storm	0	**Cubic Feet**	0	**Gallons**
Normal Rainfall	0	**Cubic Feet**	0	**Gallons**
Rainfall on Pond Surface				
25Yr-24Hr Storm	15,092	**Cubic Feet**	112,891	**Gallons**
Normal Rainfall minus Evaporation	12,707	**Cubic Feet**	95,046	**Gallons**
Accumulated Solids	0	**Cubic Feet**	0	**Gallons**
Design Operating Volume ..	198,694	**Cubic Feet**	1,486,229	**Gallons**
Total Storage Volume	213,786	**Cubic Feet**	1,599,119	**Gallons**
Ramp Volume (if applicable)	0	**Cubic Feet**		
Structural Volume (includes effects of ramp if present)	281,867	**Cubic Feet**		



AWM
Solids Stacking Facility Data for: Noo Sun

Designed by: JHR

Facility	***Dry Stack (Uncovered) #1***	
Storage Period	3	***Months***
Manure	26,696	***Cubic Feet***
Bedding	15,334	***Cubic Feet***
Total Volume to Store	42,030	***Cubic Feet***
Total Volume of Facility	51,979	***Cubic Feet***

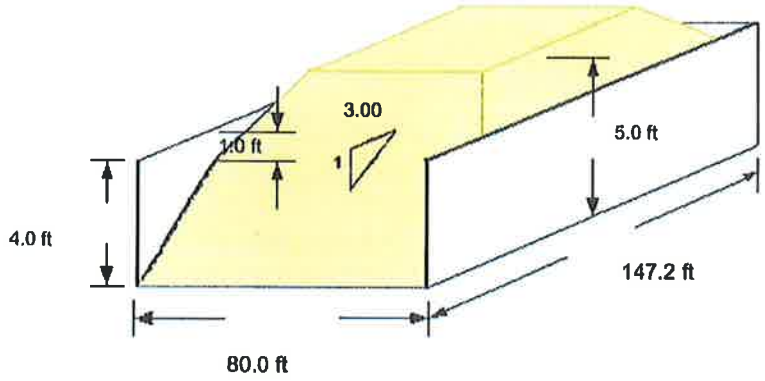


AWM

Solids Stacking Facility Data for: Noo Sun

Designed by: JHR

Facility	**Dry Stack (Uncovered) #2**	
Storage Period	3	*Months*
Manure	38,499	*Cubic Feet*
Bedding	15,334	*Cubic Feet*
Total Volume to Store	53,833	*Cubic Feet*
Total Volume of Facility	66,106	*Cubic Feet*



3.4 Animal Mortality Management

a. Mortality management and disposal shall be according to NRCS practices and any applicable state, county, or local requirements.

b. Properly dispose of dead animals in a timely manner. Animals shall be disposed of in a manner to prevent contamination of surface waters of the state or creation of a public health hazard.

Dead Animal Management:
Dead animals are currently being composted on property owned by Hancock Dairies. The dairy has a proven history of composting animals and separating large bones from the compost before mixing into the normal compost production facility. The dead animal compost facility is located on the Harper Dairy property and all dead animals from the four facilities are composted at that site.

Composting of mortalities, blood, and animal by-products requires approval from the Division of Solid and Hazardous Waste (DSHW). Please contact DSHW at (801) 536-0211 for more detail on animal composting requirements.

In the case of a mass mortality event, animals that can be accommodated within the mortality composting process will be composted. Animals that cannot be accommodated within the existing compost plan will be incinerated in a trench. The remains will then be buried. Contact the state veterinarian's office at (801) 538-7162 in case of catastrophic death loss.

3.5 Clean Water Diversion

All buildings in the facility are guttered and the clean water is diverted to the irrigation ditch network. There is no opportunity for overland flow moving through the facility as it is bounded by the road on the west and a ditch forms an effective barrier to waters entering from the north side. The general slope of the land carries storm waters away from the facility to the southeast.

3.6 Direct Animal Contact with Surface Water

Prevent direct contact of confined animals with surface waters.

a. Surface waters of the state are not allowed to flow through animal confinement areas. (how? How are waters kept out of confinement area?)

b. Animals are not allowed access, including for watering purposes, to surface waters of the State.

c. New facilities shall not be built in surface waters of the state and no facilities are or will be located in 100-year flood plains unless the facilities are protected from 100-year floods or lesser inundation.

The facility is constructed such that there is no incidental contact of animals with water other than in the constructed watering facilities in the corrals. Overflow of water is contained and drained to the irrigation system to prevent contact with manure.

3.7 Chemical Handling

Chemicals and other contaminants such as: animal dips, pesticides, cleaning and disinfection agents, foot bath chemicals, pharmaceuticals, fertilizers, fuel, oil, cooling water, etc. are to be contained in secure containers until proper disposal at landfill or hazardous waste facility.

Ensure that chemicals and other contaminants handled on-site are not disposed of in any manure, storm water, or process wastewater storage system unless specifically designed to treat such chemicals and other contaminants. Receptacles for chemical waste must be conveniently located and maintained to secure waste for disposal at the landfill or hazardous waste facility.

Resulting from the normal operation of the CAFO, only manure, litter, compost, process wastewater, and precipitation are allowed in storage and retention structures.

Section 4 Nutrient Application and Land Management

4.1 Land Conservation and Application Practices

Identify site-specific conservation practices that will be implemented, including as appropriate, buffers or equivalent practices, to control runoff of pollutants to surface water. Such practices shall include, but are not limited to: (which practices and BMPs apply to the facility, please list and describe)

a. Solid manure shall be incorporated as soon as possible after application, unless the application site has perennial vegetation (such as alfalfa) or is no-till cropped, and where the nutrient management plan adequately demonstrates that surface water quality will be protected where manure is not immediately incorporated.

b. Process wastewater to furrow or flood-irrigated land application sites shall be applied in a manner that prevents any process wastewater runoff into surface waters of the state.

c. When process wastewater is flood, sprinkler, or drip applied, the soil water holding capacity of the soil shall not be exceeded.

d. Process wastewater shall not be applied to frozen, snow covered, or saturated land application sites unless according to NRCS practice 590, Utah Manure Application Risk Index (UMARI) or other NRCS practices.

e. Where applicable of the following, the greatest setback distance of land applied manure and process wastewater applies:

1. 100 feet (or 35-foot vegetated buffer as appropriate) of surface waters of the state.
2. 100 feet of domestic water supply wells,
3. setbacks or vegetative buffers established through UMARI or other NRCS practices, and
4. setbacks otherwise required by UAC R309-600, as it pertains to drinking water source protection.

4.2 Land Application Methods

Establish protocols to land-apply-manure or process wastewater in accordance with site specific nutrient management practices that ensure appropriate agricultural utilization of the nutrients in the manure or process wastewater. Such protocols shall include, but are not limited to:

a. Compliance to NRCS Practice 590, Nutrient Management, January 2013. The facility uses a North American Proficiency Testing (NAPT) certified laboratory for all soil testing. The Laboratory ensures compliance with NRCS and EPA protocols and guidelines

b. In association with Practice 590, USU guidelines and protocols must be followed. The Dairy uses third party soil testing services that are approved by the North American Proficiency Testing (NAPT) certified laboratory. No application of manure or process wastewater shall be made to a land application site at a rate that will exceed the capacity of the soil and the agronomic nutrient uptake of the planned crops and yields. Manure

and wastewater shall be applied to useful crops. Manure shall not be applied to bare ground or other areas where a crop will not be harvested for 12 months or more following the application.

c. Manure and process wastewater shall be applied as uniformly as possible with properly calibrated equipment. Any feed runoff, pen or corral runoff, or other process wastewater applications to fields shall be evenly distributed throughout the field.

d. Operators must inspect annually, and calibrate as needed, any equipment used for land application of manure, litter, compost, or process wastewater.

e. Direct land application of mortalities, blood, animal by-products, waste feed, waste milk, or other products or materials is prohibited unless the nutrient applications are accounted for in the NMP and DWQ approves the NMP which includes such specific applications.

The Noo Sun Dairy applies manure with both liquid and solid manure spreaders. This is done normally in the spring prior to planting and includes same day incorporation into the soil.

Waste water is applied through the surface irrigation ditch network during the growing season to encourage immediate plant use. The water table is from 50 to 100 inches deep on the property. (See soils map 2.)

Manure spreader operators are trained to follow setback requirements as outlined in the permit language.

Land application of manure will be based on the following table:

Soil Test Phosphorus (ppm)	Apply Based on
Phosphorus < 50 ppm	Spread based on nitrogen needs
Phosphorus 50 -100 ppm	Spread based on phosphorus needs
Phosphorus 100 - 120 ppm	50% of crop phosphorus needs
Phosphorus > 120 ppm	No application of manure

Utilization: On fields with soil test levels less than 50 ppm Soil Test Phosphorus (STP), solid manure can be land-applied based on crop nitrogen needs in years when corn is grown in the crop rotation. On fields with soil test levels between 50 and 100 ppm Soil Test Phosphorus (STP), solid manure will be land-applied based on crop phosphorus needs for the crop rotation. In this case, commercial nitrogen fertilizer may need to be used to maximize crop production and to facilitate crop removal of phosphorus. Nitrogen additions will be based on soil test recommendations as outlined in the Utah Fertilizer Guide.

Liquid manure and storm water runoff will be applied based on soil and manure testing and NRCS Irrigation Water Management and Nutrient Management guidelines. Liquids from the lagoon will be pumped to adjacent fields through a pipeline or by using large liquid manure spreaders. All of the liquid can be safely used on the 546 acres available along with the majority of the solid waste. To maintain the proper balance, approximately 25 percent of the solids will be composted and used for bedding. Annual soil tests will determine the amount of solid manure applied to each field.

4.3 Calibration of Application Equipment

Spreader Calibration: Several methods are available for spreader calibration. To calibrate the solid manure spreader, first load and weigh the contents of the spreader or weigh a 5-gallon bucket of manure and multiply the weight x 1.5 x length x width x height of the spreader. This will give you tons per load of manure. To calibrate liquid/slurry spreaders, first determine the volume of material in gallons from manufacturer specifications or multiply the length x width x height of the spreader x 7.5. For volume in cylindrical tanks, multiply length x width x height of the spreader x 0.8 x 7.5.

Next determine the distance in feet that it takes to spread the entire load. Distance can be estimated or determined based on known field length or by counting fence posts along the length of the spread and multiplying by the average distance between posts. Then estimate the width of the spread in feet, allowing for a 10-20% pass overlap to ensure uniform coverage. Calculate the area covered and divide by 43,560 to convert to acres. Divide the weight or volume of manure in the spreader by the acres covered to determine the application rate for the given spreader setting (length x width of spread / acres covered = application rate in tons or gallons). Adjust the spreader settings and redo the calculations until the desired application rate is achieved.

Application rates in inches being applied through **liquid irrigation** systems can be determined by using the formula, inches applied = (cfs X hrs)/ac. In the formula, cfs represents the cubic feet per second, hrs represents the hours that the water has run, and ac. represents the acres covered. If the water is measured in gpm, it can be converted to cfs by dividing gpm by 450. The acres can be calculated by multiplying the width and length of the set, and then dividing by 43,560 (length x width / 43,560).

Where sprinkler systems are used, application rates can be estimated by placing six straight-sided cans at various locations under the sprinkler system. Measure the depth of liquid in inches accumulated in the cans over a period of time (e.g., 1 hour). Calculate the average depth of liquid in the cans and divide by the time interval to determine the application rate in inches per hour. Contact NRCS or USU if additional assistance is needed in calibrating your spreader.

4.4 Narrative Nutrient Management Planning

Nutrients will be applied to fields as outlined in the following tables for each field according to the NRCS standard 590 application rates identified in the NRCS Nutrient balance spreadsheet. The following example of the spreadsheet analysis is printed here. The remainder of the fields are attached as Appendix A.

Each field will be addressed individually using the specification sheet for that field and the guidelines for application outlined above, section 4.2.

Table 3 Field nutrient application guide. (See Appendix A for each field table.)

NUTRIENT MANAGEMENT (Manure) SPECIFICATION SHEET (590)

Name: Hancock Noo Sun Dairy **Date:** 02/22/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s):
- To budget and supply nutrients for plant production.
- To minimize agricultural non-point source pollution of surface and ground water resources.
- To maintain or improve the physical, chemical and biological condition of soil.
- To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information

Year: 20

Tract/Field Number(s): North Dairy Number of Acres: 20

Crop: Corn Silage Yield Goal: 35 tons

Soil test nitrate-N: 74 ppm Soil test P: 81 ppm

Crop nitrogen (N) recommendation:	56	lb N/acre	Based on:	Crop Uptake
Crop phosphorus (P205) recommendation:	109	lb P205/acre	Based on:	Crop Uptake

Manure Information

Manure form:	solid	
Manure N content:	14.0	lbs/ton
Manure P205 content:	1.6	lbs/ton

Application Information

Method of application: Broadcast-incorporated Method of Incorporation: Disk

Timing of Incorporation: Manure will be incorporated within 5-7 days

Date of application: _____ Field Conditions: _____

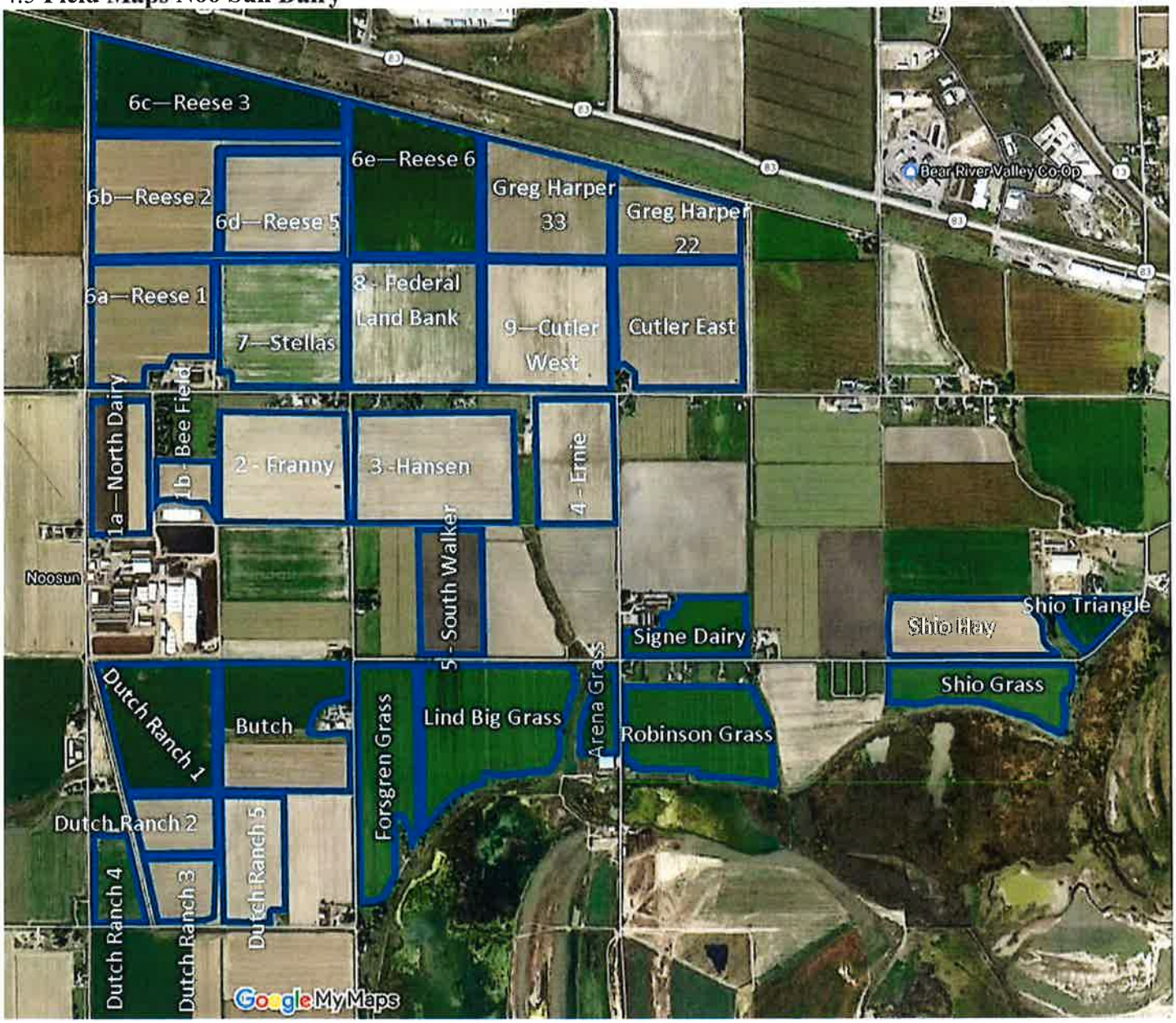
Basis of Application: Phosphorus Actual Application Rate: _____ tons/acre

Calculations

	N-based	P205-based	
1. Nutrients needed	56	109	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lbs/acre)	56	109	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton
5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton
7. Manure application rate	6	74	tons/acre
8. Travel distance while unloading spreader	6300	500	feet
9. Additional N needed if applied based on P	-662		lbs/acre

Certification
I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications. **Cooperator:** _____ **Planner:** _____

4.5 **Field Maps Noo Sun Dairy**

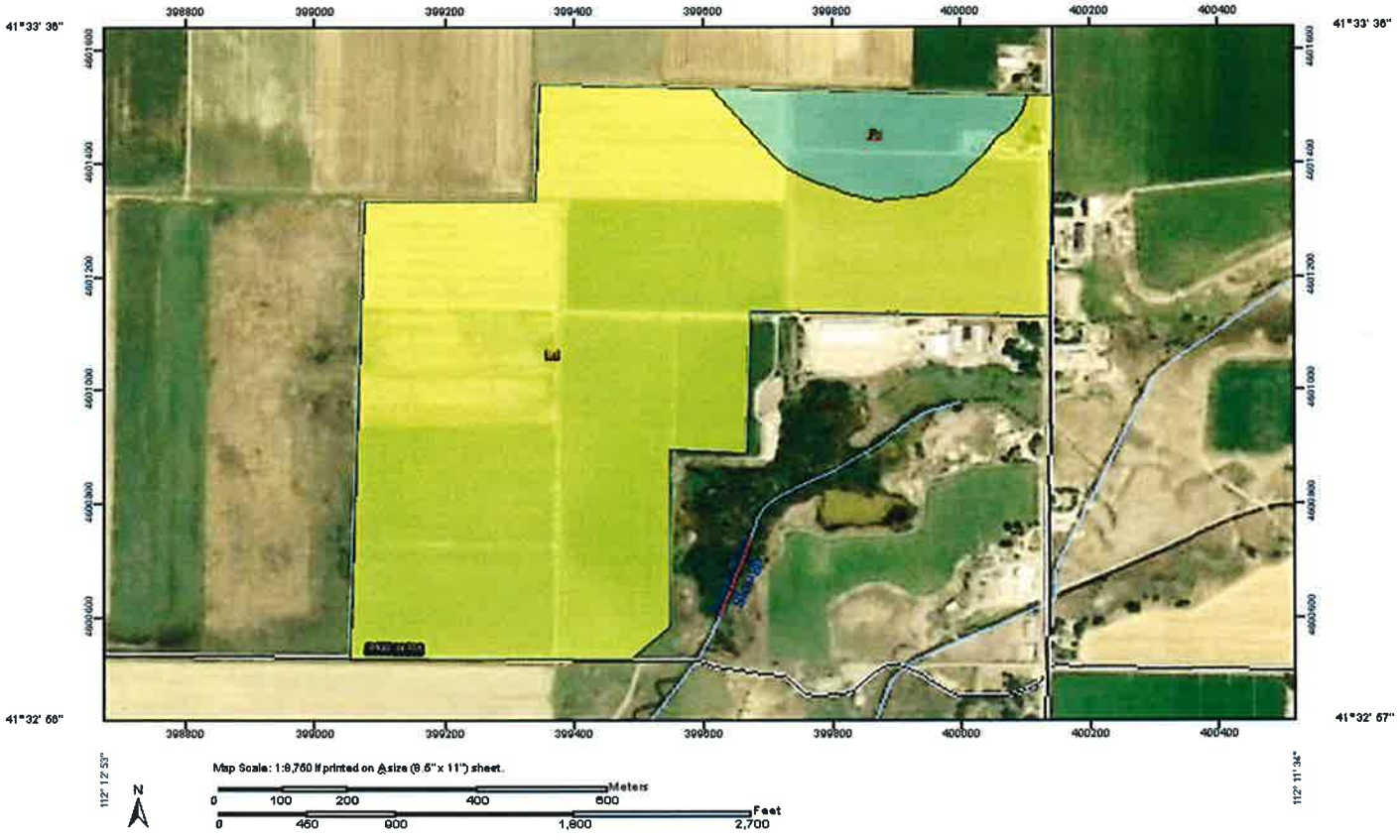


Field List

Field Name	Size in Acres	Field Name	Size in Acres
1a - [redacted]	20 Ac	10c - [redacted]	34 Ac
1b - [redacted]	8 Ac	10d - [redacted]	23 Ac
2 - [redacted]	34 Ac	10e - [redacted]	20 Ac
3 - [redacted]	43 Ac	[redacted]	38 AC
4 - [redacted]	23.4 Ac	[redacted]	33 Ac
5 - [redacted]	19 Ac	[redacted]	22.9 Ac
6a - [redacted]	33 Ac	[redacted]	38 Ac
6c - [redacted]	43 Ac	[redacted]	15 Ac
6d - [redacted]	30 Ac	[redacted]	31.2 Ac
6b - [redacted]	42 Ac	[redacted]	42.5 Ac
6e - [redacted]	44 Ac	[redacted]	7 Ac
7 - [redacted]	38 Ac	[redacted]	30 Ac
8 [redacted]	40 Ac	[redacted]	21.5 Ac
9 - [redacted]	39 Ac	[redacted]	23 Ac
10a - [redacted]	10 Ac	[redacted]	7 Ac
10b - [redacted]	11 Ac		

4.6 Soil and Field Information

Map 2 Depth to Water Table Noo Sun Dairy



USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

2/23/2012
Page 1 of 3

Depth to Water Table–Box Elder County, Utah, Eastern Part
(SunRay Dairy A)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Soil Ratings
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:9,750 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 12N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Box Elder County, Utah, Eastern Part
Survey Area Data: Version 8, Apr 7, 2011

Date(s) aerial images were photographed: 8/9/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Depth to Water Table

Depth to Water Table— Summary by Map Unit — Box Elder County, Utah, Eastern Part (UT602)				
Map unit symbol	**Map unit name**	**Rating (centimeters)**	**Acres in AOI**	**Percent of AOI**
Fv	Fridlo silt loam, 0 to 1 percent slopes	127	15.9	9.3%
Ld	Lasil silt loam, moderately saline, 0 to 1 percent slopes	99	154.9	90.7%
Totals for Area of Interest			**170.8**	**100.0%**

Description

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

4.7 Nitrogen and Phosphorus Risk Analysis

The risk analysis program used for Utah is the Utah Manure Application Risk Analysis, UMARI. The results of the UMARI runs are detailed in Table 4.7-1 below Some of the fields are getting high in P so the Dairy agrees to monitor P-levels Annually.

Current Soil Test Levels:

Noo Sun Soil Test Results

Noo Sun Dairy Fields	Soil Nitrogen Level	Soil Phosphorus level	Soil Potassium level	Crop	Yield	Size of Field	Manure Application Risk (Winter)
[redacted]	87	56	535	Wheat	110 BU	39	Low
[redacted]	13	32	700	Alfalfa	11 T	40	Low
[redacted]	17	44	845	Alfalfa	11 T	38	Low
1a - [redacted]	74	81	750	Corn Silage	35 T	20	Low
[redacted]	9	57	830	Wheat	110 BU	34	Low
[redacted]	107	84	955	Corn Silage	35 T	43	Low
[redacted]	23	23	585	Onions	800 CWT	19	Low
[redacted]	35	23	965	Corn Silage	35 T	20	Low
[redacted]	46	18	365	Corn Silage	35 T	23	Low
[redacted]	5	60	1055	Alfalfa	11 T	34	Low
[redacted]	28	40	595	Alfalfa	11 T	11	Low
[redacted]	9	59	850	Alfalfa	11 T	5	Low
[redacted]	189	35	515	Wheat	110 BU	23	Low
6a - [redacted]	58	67	825	Corn Silage	36 T	33	Low
6b - [redacted]	9	74	1300	Corn Silage	35 T	42	Low
6c - [redacted]	12	54	1045	Corn Silage	35 T	43	Low
6d - [redacted]	7	29	520	Corn Silage	35 T	30	Low
6e - [redacted]	74	57	990	Corn Silage	35 T	44	Low
1b - [redacted]	84	112	1655	Corn Silage	35 T	8	Low
					Total Acres	549	

4.8 Required NMP Submissions to DWQ

Projections that are not permit NMP terms under the NMP, that must be submitted to DWQ, are:

1. the CAFO's planned crop rotations for each field for the period of permit coverage;
2. the projected amount of manure, litter, or process wastewater to be applied is identified for each field in the attached field specification sheets.

3. projected credits for all nitrogen in the field that will be plant-available; Since the NMP accounts for the decision to apply manure on the basis of the current soil test the nitrogen needs and credits are accounted for in the calculation.

4. consideration of multi-year phosphorus application; The NMP accounts for multiple year applications in the rate to be applied when perennial crops are planted.

5. accounting for other additions of plant-available nitrogen and phosphorus to the field; is accounted for in the calculation of the impact of the nitrogen fixing crops in the chosen rotation.
6. the predicted form, source, and method of application of manure, litter, and process wastewater for each crop.

4.9 Required Calculations

1. Utilizing NRCS Practice 590 and current soil and manure monitoring results, CAFOs must calculate and determine the maximum amounts of manure, litter, and process wastewater to be land-applied on a field- specific basis, at least once each year based on the following data:

a. A determination of nitrogen and phosphorus available in soil that will be available during the growing season. This includes nitrogen mineralization from previous land applications.

b. The results of most recent representative manure, litter and process wastewater test for nitrogen and phosphorus taken within 12 months or less of the date of land application, in order to determine the amount of nitrogen and phosphorus in the manure, litter, and process wastewater to be applied. Current manure and process water tests will be recorded and attached to the NMP each year for reference in the application decision making process.

Section 5 Best Management Practices

5.1 Required BMPs

Noo Sun Dairy will:

A. Production Area Required Best Management Practices (BMPs) and Prohibitions Applicable to all CAFOs

1. Perform weekly visual inspections of all storm-water run-on diversion devices, runoff diversion structures, animal waste storage structures and devices channeling process wastewater to impoundments or tanks.

2. As required by federal requirements, perform daily visual inspections of water lines, including drinking water or cooling water lines looking for leaks that could create process wastewater that would require containment or treatment of the contaminated leaked water.

3. Install depth markers in all open liquid impoundments and terminal storage tanks to indicate the maximum elevation to maintain capacity necessary to contain the facility's required storm event amount, and in addition provide a one-foot freeboard elevation above the containment freeboard of the facility's required storm event. The depth markers shall be marked at a maximum of one-foot increments.

4. Perform weekly inspections of impoundments and tanks and record the process wastewater elevation levels in the structures as indicated by the depth marker(s).

5. Correct any deficiencies found as a result of daily and weekly inspections as soon as possible, but no later than 30 days after identifying the deficiency, unless:

   a. Factors preventing correction within 30 days have been documented.

   b. Any deficiency where storage structure freeboard or structure integrity is insufficient to contain the required storm event, must be corrected immediately and is not given the 30-day timeframe to correct a problem.

6. Remove accumulations of liquids, solids, and manure from impoundments and tanks as necessary to maintain the capacity of the structures to retain the storage volume for the required storm event.

7. Maintain on-site records documenting the implementation of these required BMPs in Paragraph G. All records shall be maintained and retained on-site for five-years from the date they were created and must be made available during inspections by DWQ or authorized agent.

8. A CAFO's production area may not be located within a 100-year flood plain, unless the production area is protected from inundation damage and discharges that may as a result of 100-year flood waters or flow.

9. There shall be no discharge of manure, litter, or process wastewater from the production area to groundwater with direct hydrologic connection to surface waters of the State.

1) Provide adequate storage and management options to accommodate the 2,000 lactating cows.
2) Manage the liquid storage facility to accommodate the liquids from the milk house, new corrals and potential storm water spills from solid storage pits.
3) Build a proper staging area for temporary storage of solid manure as needed during times when manure cannot be properly land-applied.
4) Irrigate with water from the liquid storage tank through existing surface ditches, or through a newly designed sprinkler system. Apply manure in an appropriate manner and according to agronomic rates.
5) Incorporate manure applied on the surface into the ground within 48 hours of application.
6) Record all manure applications and dispositions of manure on fields.
7) Keep monthly records of inspections and manure applications.
8) Stay in compliance with state and federal laws and regulations.
9) Maximize productivity and profitability while correcting unacceptable environmental conditions;
10) Not apply manure at any time within 100 feet of irrigation return flow ditches, wells, upstream from the sloughs, etc.
11) Establish a vegetative buffer strip on the lower 35 feet of all fields where irrigation runoff flows into a water course for summer applications on cropland before and after the crop.

Crop Rotation: Crops grown on the Noo Sun farm include alfalfa, corn for grain, corn for silage and pasture. The crop rotation is 4 to 5 years of alfalfa and 3 to 4 years of corn. The corn is generally cut for silage but some grain corn is harvested each year and the alfalfa is ensilaged and used for feed. Market and other considerations may change the actual rotation.

Irrigation Water Management: Proper management of irrigation water has a large impact on the leaching and/or runoff of coliform, nitrogen, phosphorus, and other nutrients. When applying liquid manure, irrigation applications must not exceed the soil's Available Water Holding Capacity (AWC). Irrigation water management will be carried out in accordance with the NRCS Irrigation Management Standard.

Section 6. Emergency Spill and Discharge Response Plan

6.1 Emergency Response Plan

Emergency plan: Even though there is no water body close to the manure storage facility, there is a very limited chance of manure discharge into a water body. Several prolonged precipitation events or a malfunctioning livestock watering system may cause the manure bunker, which is designed for normal precipitation plus a 25 year / 24-hour storm event to fill up prematurely and overflow. It is important to acknowledge that a problem exists before manure or wastewater leaves the property or enters a water body of the State of Utah. Suggested preventative actions include:

a. Minimize (or stop if possible) all additional flow (waters, flushing system, etc.) to the storage.
b. Use a skid loader or tractor and blade to contain or divert a spill or leak, where possible.
c. Begin emergency utilization of manure by pumping or hauling onto fields at acceptable agronomic rates.
d. Prevent additional surface water from entering the storage, where possible.
e. Add soil to dikes to fill or repair any low areas or create temporary dikes with straw bales.
f. Call the Utah Department of Environmental Quality at (801) 536-4300 during normal working hours or their 24-hour answering service at (801) 536-4123 to report discharges during emergency situations. Discharges should be reported within 24 hours of occurrence.
g. Maintain the designed storage capacity in ponds by cleaning out sediment and maintain the designed storage capacity in ponds by cleaning out sediment and emptying according to the outlined schedule in your NMP.

6.2 Required Discharge and Noncompliance Reporting;

1. The permittee shall orally report any discharge to surface waters of the state within 24 hours from the time the permittee first became aware of the discharge by calling the AFO/CAFO Program Coordinator at (801) 536-4300. Any discharge or other noncompliance that may endanger health or the environment shall be reported immediately (sooner than 24 hours) by calling the Division of Water Quality 24-hour hotline (801) 536-4123.

a. In addition, a written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:

I. a description of the noncompliance and its cause;
II. the period of noncompliance, including exact dates and times;
III. the estimated time noncompliance is expected to continue if it has not been corrected;

IV. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and
V. steps taken, if any, to mitigate the adverse impacts on the environment and human health during the noncompliance period.

Section 7 Other Requirements and Practices:

7.1 Bio-security Measures

7.2 Closure of Facilities or Dairy Operation (XI-c)

The following conditions shall apply to the closure of lagoons and other earthen or synthetic-lined basins and other manure, litter, compost, or process wastewater storage and handling structures:

1. Closure of Lagoons and Other Surface Impoundments.

   a. All lagoons and other earthen or synthetic-lined basins must be properly closed if the facility ceases operation. In addition, any lagoon or other earthen or synthetic-lined basin that is not in use for a period of twelve consecutive months must be properly closed unless the facility intends to resume use of the structure at a later date and maintains the structure as though it were actively in use. The permittee shall notify DWQ of the action taken and shall conduct required routine inspections, maintenance, and record keeping during the inactive period. No manure, litter, compost, or process wastewater storage and handling structure shall be abandoned.

   b. For proper closure, closure of lagoons and other earthen or synthetic-lined basins must be consistent with Utah NRCS Closure of Waste Impoundments Practice Standard Code 360. Consistent with this standard, the permittee shall remove all waste materials to the maximum extent practicable and utilize or dispose of them in accordance with the permittee's NMP. The permittee is responsible for any discharge of pollutants.

   c. CAFOs which have ceased operation shall maintain permit coverage until all manure, litter, compost, or process wastewater storage and handling structures have been properly closed.

7.3 Transfer of Manure, Litter, and Process Wastewater to Other Persons. (XI.A.)

A. Transfer of Manure, Litter, and Process Wastewater To Other Persons

1. When manure, litter, compost, or process wastewater is sold or given away, the permittee must comply with the following conditions:

   a. maintain records showing the date and amount of manure, litter, compost and/or process wastewater that leaves the permitted operation on an annual basis;

   b. record the name and address of the recipient;

   c. provide the recipient(s) with representative information on the phosphorus and nitrogen content of the manure, litter, compost and/or process wastewater; and

   d. for a period of five years, permit-related records are to be retained on-site and made available for review upon request. Also, records are to be submitted to DWQ upon request.

Section 8 Record Keeping

8.1 Required

Record Keeping: Records are the responsibility of the landowner and will be kept according to the following schedule. Records will include:

Annual reports
Manure transfer forms
Records needed for 4.8 above
Records of mortality management
Records of overflows, discharges, etc. with date, time, length of discharge, and volume
Land application records, dates of, weather conditions, amounts,
Records of soil, manure, wastewater, compost analysis
Expected and actual crop yields
Records of daily water line inspections
Description of basis for determining application rates
Calculations showing total N and P applied to each field including sources other than manure, compost, or wastewater
Records of dates of manure application equipment inspections and calibrations
Records of weekly inspections of structures and impoundments
Records of weekly freeboard readings
Records documenting corrective actions

Section 9 Monitoring and Analytical Methods (IX.A.7)

9.1 Manure and Soil Sampling Frequency

Manure tests will be performed annually for five years to establish average manure nutrient levels. USU guidelines and protocols will be used to collect, transport and assess samples. Using the North American Proficiency Testing (NAPT) certified laboratory. A NAPT certified lab should be "an approved" lab, and helps ensure that they are using good practices. (USU Analytical Labs is NAPT certified.)

9.2 Monitoring Protocols : EPA Sets up analytical protocols that are followed by the contracting laboratories and are beyond the scope of an NMP.

Soil and Manure Testing

Directions on collecting soil samples

For nitrogen-based applications, collect separate soil samples at depths of 0 to 12 and 12 to 24 inches. For phosphorus-based applications collect soil samples at a depth of 0 to 12 inches only. A soil probe is the most efficient way to collect samples. Probes are available on loan from County Extension Agents. Collect a composite sample by combining a minimum of 8-10 samples taken randomly throughout a field in a plastic bucket. Mix the samples and send at least one pint to the lab for analysis. More than one composite may be needed for large or highly variable fields. **Example**

Directions on collecting manure samples

Since manure is a variable material, proper procedures must be followed to ensure a representative sample is collected. For liquids, sample directly from the storage structure, from the outlet pipe where liquid is removed, or from the field using catch cans to collect samples applied through sprinklers. When sampling liquids, collect a minimum of six separate subsamples. Combine the subsamples in a clean bucket, mix well, and transfer approximately one pint of liquid to a clean bottle or other rigid container.

For solids, remove the surface six-inch crust and use an auger or shovel to core into the pile. Take a minimum of six separate sub- samples from around the pile and combine

them in a clean bucket. Mix well and transfer approx. one quart to a clean plastic bag. Keep all samples cool until they can be transported to a lab.

Section 10 Monitoring Results, (IX.A.7)

10.1 Soil Sampling results

Noo Sun Dairy Fields	Soil Nitrogen Level	Soil Phosphorus level	Soil Potassium level	Crop	Yield	Size of Field	Manure Application Risk (Winter)
[redacted]	87	56	535	Wheat	110 BU	39	Low
[redacted]	13	32	700	Alfalfa	11 T	40	Low
[redacted]	17	44	845	Alfalfa	11 T	38	Low
1a - [redacted]	74	81	750	Corn Silage	35 T	20	Low
[redacted]	9	57	830	Wheat	110 BU	34	Low
[redacted]	107	84	955	Corn Silage	35 T	43	Low
[redacted]	23	23	585	Onions	800 CWT	19	Low
[redacted]	35	23	965	Corn Silage	35 T	20	Low
[redacted]	46	18	365	Corn Silage	35 T	23	Low
[redacted]	5	60	1055	Alfalfa	11 T	34	Low
[redacted]	28	40	595	Alfalfa	11 T	11	Low
[redacted]	9	59	850	Alfalfa	11 T	5	Low
[redacted]	189	35	515	Wheat	110 BU	23	Low
6a - [redacted]	58	67	825	Corn Silage	36 T	33	Low
6b - [redacted]	9	74	1300	Corn Silage	35 T	42	Low
6c - [redacted]	12	54	1045	Corn Silage	35 T	43	Low
6d - [redacted]	7	29	520	Corn Silage	35 T	30	Low
6e - [redacted]	74	57	990	Corn Silage	35 T	44	Low
1b - [redacted]	84	112	1655	Corn Silage	35 T	8	Low
					Total Acres	549	

Soil Testing: Soil tests will be taken annually on fields except on alfalfa and grass plantings where the soil test is required only every three years. Soil tests will be used to monitor phosphorus levels. Utah State University soil-testing procedures will be followed (Refer to the attached USU soil testing guidelines). Soil tests may be sent to Utah State University or other approved private testing facilities (see NRCS for a list of approved testing facilities).

Current soil tests will be attached to the CNMP each year.

10.2 Manure Sampling Results

Manure Testing: Manure tests will be taken at least yearly. Utah State University procedures will be followed to ensure the best possible results. Manure test values will be used to determine actual moisture and nutrient content of the manure. Adjustments will be made in application rates based on actual soil and manure tests. (See Appendix A for field by field estimates of manure and soil nutrient levels.)

10.3 Compost Sampling Results

10.4 Wastewater Sampling Results

Section 11 Annual Report (XI.B.)

11.1 Annual Report Requirements

1. The permittee must submit an annual report to DWQ by April 1 of each year covering permit coverage during the previous calendar year. The reporting requirements and April 1 deadline also applies to facilities with partial years of permit coverage. The dairy will use the Annual Report Form for the annual report.

Plan Review: This plan will be reviewed and updated at least once every five years. This is to assure that the operation is still running correctly, is being managed such that the correct amounts of animal manure are being applied and that the plan is working properly. Updated plans must meet NRCS standards and specifications. The plan must also be reviewed and, if needed, revised if the STP levels start to exceed 50 ppm or when significant changes (>20%) are made in animal numbers or in the manner that manure is handled.

Signatures: This nutrient management plan is based on my current and planned system and objectives. I have reviewed this plan and understand what is required. My decisions for installation, operation, maintenance, and safety are accurately represented by this plan. I agree to operate according to this plan for the life of the contract and beyond to ensure that all objectives are met. I understand that it is my responsibility to obtain all permits required to implement this plan. If I plan to alter my operation I will contact the Weber Soil Conservation District to determine if a revised plan is needed.

_____ - _____

Mitch Hancock **Date**

_____ - _____

Certified Planner **Date**
Howard R. Thomas

Appendix A Field specification sheets for Manure Application

NUTRIENT MANAGEMENT (Manure) SPECIFICATION SHEET (590)

Name: Hancock Noo Sun Dairy **Date:** 02/22/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s):
- To budget and supply nutrients for plant production.
- To minimize agricultural non-point source pollution of surface and ground water resources.
- To maintain or improve the physical, chemical and biological condition of soil.
- To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information

Year: 2008

Tract/Field Number(s): [redacted] Number of Acres: 20

Crop: Corn Silage Yield Goal: 35 tons

Soil test nitrate-N: 74 ppm Soil test P: 81 ppm

Crop nitrogen (N) recommendation:	56	lb N/acre	Based on:	Crop Uptake
Crop phosphorus (P205) recommendation:	109	lb P205/acre	Based on:	Crop Uptake

Manure Information

Manure form:	solid	
Manure N content:	14.0	lbs/ton
Manure P205 content:	1.6	lbs/ton

Application Information

Method of application: Broadcast-incorporated Method of Incorporation: Disk

Timing of Incorporation: Manure will be incorporated within 5-7 days

Date of application: _____ Field Conditions: _____

Basis of Application: Phosphorus Actual Application Rate: _____ tons/acre

Calculations

	N-based	P205-based	
1. Nutrients needed	56	109	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lb/acre)	56	109	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton
5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton
7. Manure application rate	6	74	tons/acre
8. Travel distance while unloading spreader	6300	500	feet
9. Additional N needed if applied based on P	-662		lbs/acre

Certification

I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications.

Cooperator: _____ **Planner:** _____

NUTRIENT MANAGEMENT (Manure) SPECIFICATION SHEET (590)

Name: Hancock NooSun Dairy **Date:** 05/20/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s):
- To budget and supply nutrients for plant production.
- To minimize agricultural non-point source pollution of surface and ground water resources.
- To maintain or improve the physical, chemical and biological condition of soil.
- To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information **Year:** 3012

Tract/Field Number(s): [redacted] Number of Acres: 42

Crop: Corn Silage Yield Goal: 35 tons

Soil test nitrate-N: 9 ppm Soil test P: 74 ppm

Crop nitrogen (N) recommendation:	230	lb N/acre	Based on:	USU Calculated
Crop phosphorus (P205) recommendation:	109	lb P205/acre	Based on:	Crop Uptake

Manure Information

Manure form:	solid	
Manure N content:	14.0	lbs/ton
Manure P205 content:	1.6	lbs/ton

Application Information

Method of application: Broadcast-incorporated Method of Incorporation: Disk

Timing of Incorporation: Manure will be incorporated within 5-7 days

Date of application: _____ Field Conditions: _____

Basis of Application: Nitrogen Actual Application Rate: _____ tons/acre

Calculations

	N-based	P205-based	
1. Nutrients needed	230	109	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lb/acre)	230	109	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton
5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton
7. Manure application rate	24	74	tons/acre
8. Travel distance while unloading spreader	1500	500	feet

Certification

I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications.

Cooperator: _____ **Planner:** _____

NUTRIENT MANAGEMENT (Manure)
SPECIFICATION SHEET (590)

Name: Noo Sun Dairy Hancock **Date:** 02/22/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s):
To budget and supply nutrients for plant production.
To minimize agricultural non-point source pollution of surface and ground water resources.
To maintain or improve the physical, chemical and biological condition of soil.
To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information

Year: 2012

Tract/Field Number(s): [redacted] Number of Acres: 8

Crop: Corn Silage Yield Goal: 35 tons

Soil test nitrate-N: 84 ppm Soil test P: 112 ppm

Crop nitrogen (N) recommendation: 0 lb N/acre Based on: USU Calculated

Crop phosphorus (P205) recommendation: 0 lb P205/acre Based on: Crop Uptake

Manure Information

Manure form: solid

Manure N content: 14.0 lbs/ton

Manure P205 content: 1.6 lbs/ton

Application Information

Method of application: Broadcast-incorporated Method of Incorporation: Disk

Timing of Incorporation: Manure will be incorporated within 5-7 days

Date of application: _____ Field Conditions: _____

Basis of Application: Phosphorus Actual Application Rate: _____ tons/acre

Calculations

	N-based	P205-based	
1. Nutrients needed	0	0	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lb/acre)	0	0	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton

5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton
7. Manure application rate	0	0	tons/acre
8. Travel distance while unloading spreader	0	0	feet
9. Additional N needed if applied based on P	0		lbs/acre

Certification

I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications.

Cooperator: _____ **Planner:** _____

NUTRIENT MANAGEMENT (Manure) SPECIFICATION SHEET (590)

Name: Hancock Noo Sun Dairy **Date:** 02/22/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s):
- To budget and supply nutrients for plant production.
- To minimize agricultural non-point source pollution of surface and ground water resources.
- To maintain or improve the physical, chemical and biological condition of soil.
- To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information **Year:** 2012

Tract/Field Number(s): Franny Number of Acres: 34

Crop: Wheat, Irrigated Yield Goal: 110 bu

Soil test nitrate-N: 9 ppm Soil test P: 57 ppm

Crop nitrogen (N) recommendation:	124	lb N/acre	Based on:	USU Calculated
Crop phosphorus (P205) recommendation:	77	lb P205/acre	Based on:	Crop Uptake

Manure Information

Manure form:	solid	
Manure N content:	14.0	lbs/ton
Manure P205 content:	1.6	lbs/ton

Application Information

Method of application:	Broadcast-incorporated	Method of Incorporation:	Disk
Timing of Incorporation:	Manure will be incorporated within 5-7 days		
Date of application:		Field Conditions:	
Basis of Application:	Phosphorus	Actual Application Rate:	tons/acre

Calculations

	N-based	P205-based	
1. Nutrients needed	124	77	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lb/acre)	124	77	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton
5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton
7. Manure application rate	13	53	tons/acre
8. Travel distance while unloading spreader	2900	700	feet
9. Additional N needed if applied based on P	-386		lbs/acre

Certification

I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications.

Cooperator: _____ **Planner:** _____

NUTRIENT MANAGEMENT (Manure) SPECIFICATION SHEET (590)

Name: Hancock Noo Sun **Date:** 02/22/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s):
- To budget and supply nutrients for plant production.
- To minimize agricultural non-point source pollution of surface and ground water resources.
- To maintain or improve the physical, chemical and biological condition of soil.
- To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information **Year:** 2008

Tract/Field Number(s): [redacted] Number of Acres: 43

Crop:	Corn Silage		Yield Goal:	35	tons
Soil test nitrate-N:	107	ppm	Soil test P:	84	ppm
Crop nitrogen (N) recommendation:	0	lb N/acre	Based on:	USU Calculated	
Crop phosphorus (P205) recommendation:	109	lb P205/acre	Based on:	Crop Uptake	

Manure Information

Manure form:	solid	
Manure N content:	14.0	lbs/ton
Manure P205 content:	1.6	lbs/ton

Application Information

Method of application:	Broadcast-incorporated	Method of Incorporation:	Disk
Timing of Incorporation:	Manure will be incorporated within 5-7 days		
Date of application:		Field Conditions:	
Basis of Application:	Phosphorus	Actual Application Rate:	tons/acre

Calculations

	N-based	P205-based	
1. Nutrients needed	0	109	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lb/acre)	0	109	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton
5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton
7. Manure application rate	0	74	tons/acre
8. Travel distance while unloading spreader	0	500	feet
9. Additional N needed if applied based on P	-718		lbs/acre

Certification

I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications.

Cooperator: _____ **Planner:** _____

NUTRIENT MANAGEMENT (Manure)
SPECIFICATION SHEET (590)

Name: Hancock Noo Sun Dairy **Date:** 02/22/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s):
- To budget and supply nutrients for plant production.
- To minimize agricultural non-point source pollution of surface and ground water resources.
- To maintain or improve the physical, chemical and biological condition of soil.
- To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information — Year: 2012

Tract/Field Number(s): [redacted] Number of Acres: 23.4

Crop: Wheat, Irrigated Yield Goal: 110 bu

Soil test nitrate-N: 189 ppm Soil test P: 35 ppm

Crop nitrogen (N) recommendation:	0	lb N/acre	Based on:	USU Calculated
Crop phosphorus (P205) recommendation:	77	lb P205/acre	Based on:	Crop Uptake

Manure Information

Manure form:	solid	
Manure N content:	14.0	lbs/ton
Manure P205 content:	1.6	lbs/ton

Application Information

Method of application: Broadcast-incorporated Method of Incorporation: None

Timing of Incorporation: Manure will be incorporated

Date of application: _____ Field Conditions: _____

Basis of Application: Phosphorus Actual Application Rate: _____ tons/acre

Calculations

	N-based	P205-based	
1. Nutrients needed	0	77	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lb/acre)	0	77	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton
5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton
7. Manure application rate	0	53	tons/acre
8. Travel distance while unloading spreader	0	700	feet
9. Additional N needed if applied based on P	-510		lbs/acre

Certification

I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications.

Cooperator: _____ **Planner:** _____

NUTRIENT MANAGEMENT (Manure) SPECIFICATION SHEET (590)

Name: Hancock NooSun Dairy **Date:** 02/22/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s):
- To budget and supply nutrients for plant production.
- To minimize agricultural non-point source pollution of surface and ground water resources.
- To maintain or improve the physical, chemical and biological condition of soil.
- To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information **Year:** 2012

Tract/Field Number(s): [redacted] Number of Acres: 19

Crop: Onions Yield Goal: 800 cwt

Soil test nitrate-N: 23 ppm Soil test P: 23 ppm

Crop nitrogen (N) recommendation: 5 lb N/acre Based on: USU Calculated

Crop phosphorus (P205) recommendation: 104 lb P205/acre Based on: Crop Uptake

Manure Information

Manure form:	soli d	
Manure N content:	14.0	lbs/ton
Manure P205 content:	1.6	lbs/ton

Application Information

Method of application: Broadcast-incorporated

Method of Incorporation: Disk

Timing of Incorporation: Manure will be incorporated within 5-7 days

Date of application: _____

Field Conditions: _____

Basis of Application: Nitrogen

Actual Application Rate: _____ tons/acre

Calculations

	N-based	P205-based	
1. Nutrients needed	5	104	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lb/acre)	5	104	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton
5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton
7. Manure application rate	1	71	tons/acre
8. Travel distance while unloading spreader	71000	500	feet

Certification

I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications.

Cooperator: _____ **Planner:** _____

NUTRIENT MANAGEMENT (Manure) SPECIFICATION SHEET (590)

Name: Hancock NooSun Dairy **Date:** 02/22/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s):
- To budget and supply nutrients for plant production.
- To minimize agricultural non-point source pollution of surface and ground water resources.
- To maintain or improve the physical, chemical and biological condition of soil.
- To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information

Year: 2012

Tract/Field Number(s): [redacted]

Number of Acres: 33

Crop: Corn Silage

Yield Goal: 36 tons

Soil test nitrate-N: 58 ppm

Soil test P: 67 ppm

Crop nitrogen (N) recommendation:	0	lb N/acre	Based on:	USU Calculated
Crop phosphorus (P205) recommendation:	112	lb P205/acre	Based on:	Crop Uptake

Manure Information

Manure form:	solid	
Manure N content:	14.0	lbs/ton
Manure P205 content:	1.6	lbs/ton

Application Information

Method of application: Broadcast-incorporated

Method of Incorporation: Disk

Timing of Incorporation: Manure will be incorporated within 5-7 days

Date of application: _____ Field Conditions: _____

Basis of Application: Phosphorus

Actual Application Rate: _____ tons/acre

Calculations

	N-based	P205-based	
1. Nutrients needed	0	112	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lb/acre)	0	112	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton
5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton

7. Manure application rate	0	77	tons/acre
8. Travel distance while unloading spreader	0	500	feet
9. Additional N needed if applied based on P	-739		lbs/acre

Certification

I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications.

Cooperator: _____ **Planner:** _____

NUTRIENT MANAGEMENT (Manure) SPECIFICATION SHEET (590)

Name: Hancock NooSun Dairy **Date:** 02/22/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s):
- To budget and supply nutrients for plant production.
- To minimize agricultural non-point source pollution of surface and ground water resources.
- To maintain or improve the physical, chemical and biological condition of soil.
- To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information

Year: 301 2

Tract/Field Number(s): [redacted] Number of Acres: 42

Crop: Corn Silage Yield Goal: 35 tons

Soil test nitrate-N: 9 ppm Soil test P: 74 ppm

Crop nitrogen (N) recommendation: 230 lb N/acre Based on: USU Calculated

Crop phosphorus (P205) recommendation: 109 lb P205/acre Based on: Crop Uptake

Manure Information

Manure form:	solid	
Manure N content:	14.0	lbs/ton
Manure P205 content:	1.6	lbs/ton

Application Information

Method of application: Broadcast-incorporated Method of Incorporation: Disk

Timing of Incorporation: Manure will be incorporated within 5-7 days

Date of application: _____ Field Conditions: _____

Basis of Application: Nitrogen Actual Application Rate: _____ tons/acre

Calculations

	N-based	P205-based	
1. Nutrients needed	230	109	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lb/acre)	230	109	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton
5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton
7. Manure application rate	24	74	tons/acre
8. Travel distance while unloading spreader	1500	500	feet

Certification

I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications.

Cooperator: _____ **Planner:** _____

NUTRIENT MANAGEMENT (Manure) SPECIFICATION SHEET (590)

Name: Hancock NooSun Dairy **Date:** 02/22/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s):
- To budget and supply nutrients for plant production.
- To minimize agricultural non-point source pollution of surface and ground water resources.
- To maintain or improve the physical, chemical and biological condition of soil.
- To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information **Year:** 2012

Tract/Field Number(s): [redacted] Number of Acres: 43

Crop: Corn Silage Yield 35 tons

			Goal:		
Soil test nitrate-N:	12	ppm	Soil test P:	54	ppm
Crop nitrogen (N) recommendation:	215	lb N/acre	Based on:	USU Calculated	
Crop phosphorus (P205) recommendation:	109	lb P205/acre	Based on:	Crop Uptake	

Manure Information

Manure form:	solid	
Manure N content:	14.0	lbs/ton
Manure P205 content:	1.6	lbs/ton

Application Information

Method of application: Broadcast-incorporated

Method of Incorporation: Disk

Timing of Incorporation: Manure will be incorporated within 5-7 days

Date of application: _____

Field Conditions: _____

Basis of Application: Phosphorus

Actual Application Rate: _____ tons/acre

Calculations

	N-based	P205-based	
1. Nutrients needed	215	109	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lb/acre)	215	109	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton
5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton
7. Manure application rate	22	74	tons/acre
8. Travel distance while unloading spreader	1700	500	feet
9. Additional N needed if applied based on P	-503		lbs/acre

Certification

I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications.

Cooperator: _____ **Planner:** _____

NUTRIENT MANAGEMENT (Manure)
SPECIFICATION SHEET (590)

Name: Hancock NooSun Dairy **Date:** 02/22/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s):
- To budget and supply nutrients for plant production.
- To minimize agricultural non-point source pollution of surface and ground water resources.
- To maintain or improve the physical, chemical and biological condition of soil.
- To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information

Year: 2012

Tract/Field Number(s): [redacted] Number of Acres: 30

Crop: Corn Silage Yield Goal: 35 tons

Soil test nitrate-N: 7 ppm Soil test P: 29 ppm

Crop nitrogen (N) recommendation:	240	lb N/acre	Based on:	USU Calculated
Crop phosphorus (P205) recommendation:	109	lb P205/acre	Based on:	Crop Uptake

Manure Information

Manure form:	solid	
Manure N content:	14.0	lbs/ton
Manure P205 content:	1.6	lbs/ton

Application Information

Method of application: Broadcast Method of Incorporation: None

Timing of Incorporation: Manure will be incorporated

Date of application: _____ Field Conditions: _____

Basis of Application: Nitrogen Actual Application Rate: _____ tons/acre

Calculations

	N-based	P205-based	
1. Nutrients needed	240	109	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lb/acre)	240	109	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton
5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton
7. Manure application rate	25	74	tons/acre
8. Travel distance while unloading spreader	1500	500	feet

Certification

I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications.

Cooperator: _____ **Planner:** _____

NUTRIENT MANAGEMENT (Manure) SPECIFICATION SHEET (590)

Name: Hancock NooSun Dairy **Date:** 02/22/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s):
- To budget and supply nutrients for plant production.
- To minimize agricultural non-point source pollution of surface and ground water resources.
- To maintain or improve the physical, chemical and biological condition of soil.
- To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information

Year: 2012

Tract/Field Number(s): [redacted] Number of Acres: 44

Crop: Alfalfa Yield Goal: 8 tons

Soil test nitrate-N: 74 ppm Soil test P: 57 ppm

Crop nitrogen (N) recommendation: 0 lb N/acre Based on: USU Calculated

Crop phosphorus (P205) recommendation: 104 lb P205/acre Based on: Crop Uptake

Manure Information

Manure form:	soli d	
Manure N content:	14.0	lbs/ton
Manure P205 content:	1.6	lbs/ton

Application Information

Method of application: Broadcast Method of Incorporation: None

Timing of Incorporation: Manure will be incorporated

Date of application: _____ Field Conditions: _____

Basis of Application: Phosphorus Actual Application Rate: _____ tons/acre

Calculations

	N-based	P205-based	
1. Nutrients needed	0	104	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lb/acre)	0	104	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton
5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton
7. Manure application rate	0	71	tons/acre
8. Travel distance while unloading spreader	0	500	feet
9. Additional N needed if applied based on P	-689		lbs/acre

Certification

I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications.

Cooperator: _____ **Planner:** _____

NUTRIENT MANAGEMENT (Manure) SPECIFICATION SHEET (590)

Name: Hancock NooSun Dairy **Date:** 02/22/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s):
- To budget and supply nutrients for plant production.
- To minimize agricultural non-point source pollution of surface and ground water resources.
- To maintain or improve the physical, chemical and biological condition of soil.
- To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information

Year: 2012

Tract/Field Number(s): [redacted]

Number of Acres: 38

Crop: Alfalfa

Yield Goal: 11 tons

Soil test nitrate-N: 17 ppm

Soil test P: 44 ppm

Crop nitrogen (N) recommendation: 0 lb N/acre

Based on: USU Calculated

Crop phosphorus (P205) recommendation: 143 lb P205/acre

Based on: Crop Uptake

Manure Information

Manure form: solid

Manure N content: 14.0 lbs/ton

Manure P205 content: 1.6 lbs/ton

Application Information

Method of application: Broadcast

Method of Incorporation: None

Timing of Incorporation: Manure will be incorporated

Date of application: _____

Field Conditions: _____

Basis of Application: Phosphorus

Actual Application Rate: _____ tons/acre

Calculations

	N-based	P205-based	
1. Nutrients needed	0	143	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lb/acre)	0	143	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton
5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton

7. Manure application rate	0	98	tons/acre
8. Travel distance while unloading spreader	0	400	feet
9. Additional N needed if applied based on P	-947		lbs/acre

Certification

I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications.

Cooperator: _____ **Planner:** _____

NUTRIENT MANAGEMENT (Manure) SPECIFICATION SHEET (590)

Name: Hancock NooSun Dairy **Date:** 02/22/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s):
- To budget and supply nutrients for plant production.
- To minimize agricultural non-point source pollution of surface and ground water resources.
- To maintain or improve the physical, chemical and biological condition of soil.
- To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information **Year:** 2012

Tract/Field Number(s): [redacted] Number of Acres: 40

Crop: Alfalfa Yield Goal: 11 tons

Soil test nitrate-N: 13 ppm Soil test P: 32 ppm

Crop nitrogen (N) recommendation:	0	lb N/acre	Based on:	USU Calculated
Crop phosphorus (P205) recommendation:	143	lb P205/acre	Based on:	Crop Uptake

Manure Information

Manure form:	solid	
Manure N content:	14.0	lbs/ton
Manure P205 content:	1.6	lbs/ton

Application Information

Method of application: Broadcast Method of Incorporation: None

Timing of Incorporation: Manure will be incorporated

Date of application: _____ Field Conditions: _____

Basis of Application: Phosphorus Actual Application Rate: _____ tons/acre

Calculations

	N-based	P205-based	
1. Nutrients needed	0	143	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lb/acre)	0	143	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton
5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton
7. Manure application rate	0	98	tons/acre
8. Travel distance while unloading spreader	0	400	feet
9. Additional N needed if applied based on P	-947		lbs/acre

Certification

I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications.

Cooperator: _____ **Planner:** _____

NUTRIENT MANAGEMENT (Manure) SPECIFICATION SHEET (590)

Name: Hancock NooSun Dairy **Date:** 02/22/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s):
- To budget and supply nutrients for plant production.
- To minimize agricultural non-point source pollution of surface and ground water resources.
- To maintain or improve the physical, chemical and biological condition of soil.
- To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information **Year:** 2012

Tract/Field Number(s): [redacted] Number of Acres: 39

Crop: Wheat, Yield Goal: 110 bu

Irrigated					
Soil test nitrate-N:	87	ppm	Soil test P:	56	ppm
Crop nitrogen (N) recommendation:	0	lb N/acre	Based on:	USU Calculated	
Crop phosphorus (P205) recommendation:	77	lb P205/acre	Based on:	Crop Uptake	

Manure Information

Manure form:	soli d	
Manure N content:	14.0	lbs/ton
Manure P205 content:	1.6	lbs/ton

Application Information

Method of application:	Broadcast	Method of Incorporation:	None
Timing of Incorporation:	Manure will be incorporated		
Date of application:		Field Conditions:	
Basis of Application:	Phosphorus	Actual Application Rate:	tons/acre

Calculations

	N-based	P205-based	
1. Nutrients needed	0	77	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lb/acre)	0	77	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton
5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton
7. Manure application rate	0	53	tons/acre
8. Travel distance while unloading spreader	0	700	feet
9. Additional N needed if applied based on P	-510		lbs/acre

Certification

I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications.

Cooperator: _____ **Planner:** _____

NUTRIENT MANAGEMENT (Manure)
SPECIFICATION SHEET (590)

Name: Hancock NooSun Dairy **Date:** 02/22/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s):
- To budget and supply nutrients for plant production.
- To minimize agricultural non-point source pollution of surface and ground water resources.
- To maintain or improve the physical, chemical and biological condition of soil.
- To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information

Year: 2012

Tract/Field Number(s): [redacted] Number of Acres: 5

Crop: Alfalfa Yield Goal: 11 tons

Soil test nitrate-N: 9 ppm Soil test P: 59 ppm

Crop nitrogen (N) recommendation:	0	lb N/acre	Based on:	USU Calculated
Crop phosphorus (P205) recommendation:	143	lb P205/acre	Based on:	Crop Uptake

Manure Information

Manure form:	solid	
Manure N content:	14.0	lbs/ton
Manure P205 content:	1.6	lbs/ton

Application Information

Method of application: Broadcast Method of Incorporation: None

Timing of Incorporation: Manure will be incorporated

Date of application: _____ Field Conditions: _____

Basis of Application: Phosphorus Actual Application Rate: _____ tons/acre

Calculations

	N-based	P205-based

1. Nutrients needed	0	143	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lb/acre)	0	143	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton
5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton
7. Manure application rate	0	98	tons/acre
8. Travel distance while unloading spreader	0	400	feet
9. Additional N needed if applied based on P	-947		lbs/acre

Certification

I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications.

Cooperator: _____ **Planner:** _____

NUTRIENT MANAGEMENT (Manure) SPECIFICATION SHEET (590)

Name: Hancock NooSun Dairy **Date:** 02/22/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s):
- To budget and supply nutrients for plant production.
- To minimize agricultural non-point source pollution of surface and ground water resources.
- To maintain or improve the physical, chemical and biological condition of soil.
- To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information **Year:** 2012

Tract/Field Number(s): [redacted] Number of Acres: 11

Crop: Alfalfa Yield Goal: 11 tons

Soil test nitrate-N: 28 ppm Soil test P: 40 ppm

Crop nitrogen (N) recommendation: 0 lb N/acre Based on: USU Calculated

Crop phosphorus (P205) recommendation: 143 lb P205/acre Based on: Crop Uptake

Manure Information

Manure form:	soli d	
Manure N content:	14.0	lbs/ton
Manure P205 content:	1.6	lbs/ton

Application Information

Method of application: Broadcast

Method of Incorporation: None

Timing of Incorporation: Manure will be incorporated

Date of application: _____

Field Conditions: _____

Basis of Application: Phosphorus

Actual Application Rate: _____ tons/acre

Calculations

	N-based	P205-based	
1. Nutrients needed	0	143	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lb/acre)	0	143	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton
5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton
7. Manure application rate	0	98	tons/acre
8. Travel distance while unloading spreader	0	400	feet
9. Additional N needed if applied based on P	-947		lbs/acre

Certification

I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications.

Cooperator: _____ **Planner:** _____

NUTRIENT MANAGEMENT (Manure) SPECIFICATION SHEET (590)

Name: Hancock NooSun Dairy **Date:** 02/22/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s): To budget and supply nutrients for plant production.

To minimize agricultural non-point source pollution of surface and ground water resources.
To maintain or improve the physical, chemical and biological condition of soil.
To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information

Year: 2012

Tract/Field Number(s): [redacted]

Number of Acres: 34

Crop: Alfalfa

Yield Goal: 11 tons

Soil test nitrate-N: 5 ppm

Soil test P: 60 ppm

Crop nitrogen (N) recommendation: 0 lb N/acre

Based on: USU Calculated

Crop phosphorus (P205) recommendation: 143 lb P205/acre

Based on: Crop Uptake

Manure Information

Manure form:	solid	
Manure N content:	14.0	lbs/ton
Manure P205 content:	1.6	lbs/ton

Application Information

Method of application: Broadcast

Method of Incorporation: None

Timing of Incorporation: Manure will be incorporated

Date of application: _____

Field Conditions: _____

Basis of Application: Phosphorus

Actual Application Rate: _____ tons/acre

Calculations

	N-based	P205-based	
1. Nutrients needed	0	143	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lb/acre)	0	143	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton
5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton
7. Manure application rate	0	98	tons/acre

8. Travel distance while unloading spreader	0	400	feet
9. Additional N needed if applied based on P	-947		lbs/acre

Certification

I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications.

Cooperator: _____ **Planner:** _____

NUTRIENT MANAGEMENT (Manure) SPECIFICATION SHEET (590)

Name: Hancock NooSun Dairy **Date:** 02/22/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s):
- To budget and supply nutrients for plant production.
- To minimize agricultural non-point source pollution of surface and ground water resources.
- To maintain or improve the physical, chemical and biological condition of soil.
- To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information

Year: 2012

Tract/Field Number(s): [redacted] Number of Acres: 23

Crop: Corn Silage Yield Goal: 35 tons

Soil test nitrate-N: 46 ppm Soil test P: 18 ppm

Crop nitrogen (N) recommendation:	45	lb N/acre	Based on:	USU Calculated
Crop phosphorus (P205) recommendation:	109	lb P205/acre	Based on:	Crop Uptake

Manure Information

Manure form:	solid	
Manure N content:	14.0	lbs/ton
Manure P205 content:	1.6	lbs/ton

Application Information

Method of application: Broadcast Method of Incorporation: None

Timing of Incorporation: Manure will be incorporated

Date of application: _____ Field Conditions: _____

Basis of Application: Phosphorus Actual Application Rate: _____ tons/acre

Calculations

	N-based	P205-based	
1. Nutrients needed	45	109	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lb/acre)	45	109	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton
5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton
7. Manure application rate	5	74	tons/acre
8. Travel distance while unloading spreader	7900	500	feet
9. Additional N needed if applied based on P	-673		lbs/acre

Certification

I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications.

Cooperator: _____ **Planner:** _____

NUTRIENT MANAGEMENT (Manure) SPECIFICATION SHEET (590)

Name: Hancock NooSun Dairy **Date:** 02/22/16

Planned By: HRT **Field Office:** Tremonton

Purpose(s):
- To budget and supply nutrients for plant production.
- To minimize agricultural non-point source pollution of surface and ground water resources.
- To maintain or improve the physical, chemical and biological condition of soil.
- To prevent or reduce excess nutrient concentrations in the soil.

Field and Soil Information **Year:** 2012

Tract/Field Number(s): [redacted] Number of Acres: 20

Crop: Corn Silage Yield Goal: 35 tons

Soil test nitrate-N: 35 ppm Soil test 23 ppm

			P:		
Crop nitrogen (N) recommendation:	100	lb N/acre	Based on:	USU Calculated	
Crop phosphorus (P205) recommendation:	109	lb P205/acre	Based on:	Crop Uptake	

Manure Information

Manure form:	solid	
Manure N content:	14.0	lbs/ton
Manure P205 content:	1.6	lbs/ton

Application Information

Method of application: Broadcast Method of Incorporation: None

Timing of Incorporation: Manure will be incorporated

Date of application: _____ Field Conditions: _____

Basis of Application: Phosphorus Actual Application Rate: _____ tons/acre

Calculations

	N-based	P205-based	
1. Nutrients needed	100	109	lbs/acre
2. Nutrient from other sources (credits)			lbs/acre
3. Additional nutrients needed (lb/acre)	100	109	lbs/acre
4. Total N and P205 in manure	14.0	1.6	lbs/ton
5. Nutrient availability factor	69%	90%	
6. Available nutrients in manure	9.7	1.5	lbs/ton
7. Manure application rate	10	74	tons/acre
8. Travel distance while unloading spreader	3500	500	feet
9. Additional N needed if applied based on P	-618		lbs/acre

Certification

I agree to the installation and maintenance of this practice as outlined. This practice, as installed, meets NRCS Standards and Specifications.

Cooperator: _____ **Planner:** _____

Noo Sun Soil Tests

BEAR RIVER VALLEY CO-OP — 103 — 435/744-2

4780 W. 2800 N. — Report No.: 97

CORINNE UT 84307 — Date Received: 11/3

GROWER: NOO SUN DAIRY — Date Reported: 12/01/15 Soil

Test Data	Sample 1		Sample 2		Sample 1	Sample 2
pH	8.6	VH		SAMPLE IDENTITY	[redacted]	
SALTS, mmhos/cm	3.3	VH		CROP	CORN SILAGE CHLORIDES,	
SODIUM, meq/100g	1.9	H		ACRES		
CEC, meq/100g	20.7	H		Past Crop T/Acre	NONE GIVEN EXCESS LIME,	
ORGANIC MATTER,%	1.73	M		PREV. APPLIED NUTRIENTS	0	
ORGANIC N, lb/Acre	70	M		**RECOMMENDATIONS , lbs or Units Actual Nutrients per Acre**		
AMMONIUM-N,ppm	2.7	VL				
NITRATE-N, ppm	30	M		NITROGEN	160	
PHOSPHORUS, ppm	84	VH		P_2O_5 - PHOSPHATE	0	
POTASSIUM	1200	VH		K_2O - POTASH	0	
CALCIUM, meq/100g	9.2	L		CALCIUM	0	
MAGNESIUM, meq/100g	5.6	VH		MAGNESIUM	0	
SULFATE-S, ppm	121	VH		SULFATE - SULFUR	0	
ZINC, ppm	1.1	M		ZINC	8	
IRON, ppm	8.4	M		IRON	0	
MANGANESE, ppm	3.4	M		MANGANESE	3	
COPPER, ppm	0.9	M		COPPER	0	
BORON, ppm	8.60	VH		BORON	0	
SOIL TEXTURE	See Table		See Table	ELEMENTAL SULFUR	400	

RATINGS: VL - Very Low L - Low M - Medium H - High VH - Very High

ACTUAL AND RECOMMENDED PERCENT OF CEC

SAMPLE	**Actual % Potassium**	Recom. Potassium	**Actual % Calcium**	Recom. Calcium	**Actual % Magnesium**	Recom. Magnesium	**Actual % Sodium**	Recom. Sodium
1	19.3	~~3.0-6.0%~~	44.4	~~65-80%~~	27.1	~~15-25%~~	9.2	< 3.0%
2								

CEC / SOIL TEXTURE

0-5 Sand
5-12 Loamy Sand
12-18 Sandy Loam
18-24 Silt Loam
24-36 Clay Loam
3
6+ Clay

BEAR RIVER VALLEY CO-OP — 103 — 435/744-2

4780 W. 2800 N. — Report No.: 97

CORINNE UT 84307 — Date Received: 11/3

GROWER: NOO SUN DAIRY Date Reported: 12/01/15 Soil

Test Data	Sample 1		Sample 2		Sample 1	Sample 2
pH	8.3	H		SAMPLE IDENTITY	[redacted]	
SALTS, mmhos/cm	10.7	VH		CROP	CORN SILAGE CHLORIDES,	
SODIUM, meq/100g	2.5	H		ACRES		
CEC, meq/100g	24.8	H		Past Crop T/Acre	NONE GIVEN EXCESS LIME,	
ORGANIC MATTER,%	1.63	M		PREV. APPLIED NUTRIENTS	0	
ORGANIC N, lb/Acre	65	M		**RECOMMENDATIONS , lbs or Units Actual Nutrients per Acre**		
AMMONIUM-N,ppm	2.3	VL				
NITRATE-N, ppm	211	VH		NITROGEN	0	
PHOSPHORUS, ppm	225	VH		P_2O_5 - PHOSPHATE	0	
POTASSIUM	1990	VH		K_2O - POTASH	0	
CALCIUM, meq/100g	9.1	VL		CALCIUM	0	
MAGNESIUM, meq/100g	6.6	VH		MAGNESIUM	0	
SULFATE-S, ppm	620	VH		SULFATE - SULFUR	0	
ZINC, ppm	7.9	V		ZINC	0	
IRON, ppm	15.5	H		IRON	0	
MANGANESE, ppm	4.6	M		MANGANESE	0	
COPPER, ppm	5.4	V		COPPER	0	
BORON, ppm	4.15	VH		BORON	0	
SOIL TEXTURE	See Table		See Table	ELEMENTAL SULFUR	400	

RATINGS: VL - Very Low L - Low M - Medium H - High VH - Very High

S A M ACTUAL AND RECOMMENDED PERCENT OF CEC CEC / SOIL TEXTURE

BEAR RIVER VALLEY CO-OP 103 435/744-2

4780 W. 2800 N. Report No.: 97

CORINNE UT 84307 Date Received: 11/3

GROWER: NOO SUN DAIRY Date Reported: 12/01/15 Soil

Test Data	Sample 1		Sample 2		Sample 1	Sample 2
pH	7.9	H		SAMPLE IDENTITY	[redacted], mmhos/cm	
SODIUM, meq/100g	0.5	VL		ACRES		
CEC, meq/100g	19.4	H		Past Crop T/Acre	NONE GIVEN EXCESS LIME,	
ORGANIC MATTER,%	3.18	H		PREV. APPLIED NUTRIENTS	0	
ORGANIC N, lb/Acre	110	H		**RECOMMENDATIONS , lbs or Units Actual Nutrients per Acre**		
AMMONIUM-N,ppm	3.0	VL				
NITRATE-N, ppm	60	VH		NITROGEN	60	
PHOSPHORUS, ppm	71	VH		P_2O_5 - PHOSPHATE	0	
POTASSIUM	920	VH		K_2O - POTASH	0	
CALCIUM, meq/100g	10.9	M		CALCIUM	0	
MAGNESIUM, meq/100g	4.9	VH		MAGNESIUM	0	
SULFATE-S, ppm	48	VH		SULFATE - SULFUR	0	
ZINC, ppm	2.2	H		ZINC	0	
IRON, ppm	6.2	M		IRON	0	
MANGANESE, ppm	2.8	L		MANGANESE	4	
COPPER, ppm	1.6	H		COPPER	0	
BORON, ppm	1.70	H		BORON	0	
SOIL TEXTURE	See Table		See Table	ELEMENTAL SULFUR	200	

RATINGS: VL - Very Low L - Low M - Medium H - High VH - Very High

ACTUAL AND RECOMMENDED PERCENT OF CEC

SAMPLE	**Actual % Potassium**	Recom. Potassium	**Actual % Calcium**	Recom. Calcium	**Actual % Magnesium**	Recom. Magnesium	**Actual % Sodium**	Recom. Sodium
1	15.8		56.2		25.3		2.6	

CEC / SOIL TEXTURE

0-5 Sand
5-12 Loamy Sand
12-18 Sandy Loam
18-24 Silt Loam

BEAR RIVER VALLEY CO-OP 103 435/744-2

4780 W. 2800 N. Report No.: 97

CORINNE UT 84307 Date Received: 11/3

GROWER: NOO SUN DAIRY Date Reported: 12/01/15 Soil

Test Data	Sample 1		Sample 2		Sample 1	Sample 2
pH	8.1	H		SAMPLE IDENTITY	[redacted], mmhos/cm	
SODIUM, meq/100g	1.0	M		ACRES		
CEC, meq/100g	19	H		Past Crop T/Acre	NONE GIVEN EXCESS LIME,	
ORGANIC MATTER,%	2.28	M		PREV. APPLIED NUTRIENTS	0	
ORGANIC N, lb/Acre	85	M		**RECOMMENDATIONS , lbs or Units Actual Nutrients per Acre**		
AMMONIUM-N,ppm	2.6	VL				
NITRATE-N, ppm	7	L		NITROGEN	215	
PHOSPHORUS, ppm	85	VH		P_2O_5 - PHOSPHATE	0	
POTASSIUM	315	H		K_2O - POTASH	0	
CALCIUM, meq/100g	10.7	M		CALCIUM	0	
MAGNESIUM, meq/100g	6.2	VH		MAGNESIUM	0	
SULFATE-S, ppm	58	VH		SULFATE - SULFUR	0	
ZINC, ppm	4.8	V		ZINC	0	
IRON, ppm	5.7	M		IRON	0	
MANGANESE, ppm	2.8	L		MANGANESE	4	
COPPER, ppm	2.3	H		COPPER	0	
BORON, ppm	1.85	H		BORON	0	
SOIL TEXTURE	See Table		See Table	ELEMENTAL SULFUR	150	

BEAR RIVER VALLEY CO-OP 103 435/744-2

4780 W. 2800 N. Report No.: 97

CORINNE UT 84307 Date Received: 11/3

GROWER: NOO SUN DAIRY Date Reported: 12/01/15 Soil

Test Data	Sample 1		Sample 2		Sample 1	Sample 2
pH	8.1	H		SAMPLE IDENTITY	[redacted], mmhos/cm	
SODIUM, meq/100g	1.3	M		ACRES		
CEC, meq/100g	18.9	H		Past Crop T/Acre	NONE GIVEN EXCESS LIME,	
ORGANIC MATTER,%	1.25	M		PREV. APPLIED NUTRIENTS	0	
ORGANIC N, lb/Acre	50	M		**RECOMMENDATIONS , lbs or Units Actual Nutrients per Acre**		
AMMONIUM-N,ppm	2.7	VL				
NITRATE-N, ppm	9	L		NITROGEN	245	
PHOSPHORUS, ppm	15	M		P_2O_5 - PHOSPHATE	135	
POTASSIUM	300	H		K_2O - POTASH	0	
CALCIUM, meq/100g	10.6	M		CALCIUM	0	
MAGNESIUM, meq/100g	6.0	VH		MAGNESIUM	0	
SULFATE-S, ppm	115	VH		SULFATE - SULFUR	0	
ZINC, ppm	0.8	L		ZINC	9	
IRON, ppm	13.7	H		IRON	0	
MANGANESE, ppm	2.9	L		MANGANESE	4	
COPPER, ppm	0.8	M		COPPER	0	
BORON, ppm	1.60	H		BORON	0	
SOIL TEXTURE	See Table		See Table	ELEMENTAL SULFUR	250	

BEAR RIVER VALLEY CO-OP 103 435/744-2

4780 W. 2800 N. Report No.: 98

CORINNE UT 84307 Date Received: 12/1

GROWER: NOO SUN DAIRY Date Reported: 12/18/15 Soil

Test Data	Sample 1		Sample 2		Sample 1	Sample 2
pH	8.4	H		SAMPLE IDENTITY	[redacted], mmhos/cr	
CEC, meq/100g	19.1	H		Past Crop T/Acre	NONE GIVEN EXCESS LIME,	
ORGANIC MATTER,%	2.14	M		PREV. APPLIED NUTRIENTS	0	
ORGANIC N, lb/Acre	85	M		**RECOMMENDATIONS , lbs or Units Actual Nutrients per Acre**		
AMMONIUM-N,ppm	3.2	VL				
NITRATE-N, ppm	30	M		NITROGEN	125	
PHOSPHORUS, ppm	72	VH		P_2O_5 - PHOSPHATE	0	
POTASSIUM	985	VH		K_2O - POTASH	0	
CALCIUM, meq/100g	9.4	L		CALCIUM	0	
MAGNESIUM, meq/100g	5.1	VH		MAGNESIUM	0	
SULFATE-S, ppm	73	VH		SULFATE - SULFUR	0	
ZINC, ppm	1.0	L		ZINC	7	
IRON, ppm	3.5	L		IRON	0	
MANGANESE, ppm	3.3	M		MANGANESE	0	
COPPER, ppm	0.8	M		COPPER	0	
BORON, ppm	5.15	VH		BORON	0	
SOIL TEXTURE	See Table		See Table	ELEMENTAL SULFUR	300	

BEAR RIVER VALLEY CO-OP 103 435/744-2

4780 W. 2800 N. Report No.: 98

CORINNE UT 84307 Date Received: 12/1

GROWER: NOO SUN DAIRY Date Reported: 12/18/15 Soil

Test Data	Sample 1		Sample 2		Sample 1	Sample 2
pH	8.2	H		SAMPLE IDENTITY	[redacted], mmhc	
CEC, meq/100g	17.8	M		Past Crop T/Acre	NONE GIVEN EXCESS LIME,	
ORGANIC MATTER,%	3.02	H		PREV. APPLIED NUTRIENTS	0	
ORGANIC N, lb/Acre	105	H		**RECOMMENDATIONS , lbs or Units Actual Nutrients per Acre**		
AMMONIUM-N,ppm	5.0	VL				
NITRATE-N, ppm	34	H		NITROGEN	85	
PHOSPHORUS, ppm	39	H		P_2O_5 - PHOSPHATE	15	
POTASSIUM	415	VH		K_2O - POTASH	0	
CALCIUM, meq/100g	12.0	H		CALCIUM	0	
MAGNESIUM, meq/100g	3.7	VH		MAGNESIUM	0	
SULFATE-S, ppm	145	VH		SULFATE - SULFUR	0	
ZINC, ppm	4.0	H		ZINC	0	
IRON, ppm	2.9	L		IRON	0	
MANGANESE, ppm	3.1	M		MANGANESE	0	
COPPER, ppm	0.7	M		COPPER	0	
BORON, ppm	1.65	H		BORON	0	
SOIL TEXTURE	See Table		See Table	ELEMENTAL SULFUR	150	

BEAR RIVER VALLEY CO-OP 103 435/744-2

4780 W. 2800 N. Report No.: 98

CORINNE UT 84307 Date Received: 12/1

GROWER: NOO SUN DAIRY Date Reported: 12/18/15 Soil

Test Data	Sample 1		Sample 2		Sample 1	Sample 2
pH	8.3	H		SAMPLE IDENTITY	[redacted], mm	
SODIUM, meq/100g	0.6	L		ACRES		
CEC, meq/100g	18.7	H		Past Crop T/Acre	NONE GIVEN EXCESS LIME,	
ORGANIC MATTER,%	2.29	M		PREV. APPLIED NUTRIENTS	0	
ORGANIC N, lb/Acre	85	M		**RECOMMENDATIONS , lbs or Units Actual Nutrients per Acre**		
AMMONIUM-N,ppm	4.0	VL				
NITRATE-N, ppm	23	M		NITROGEN	140	
PHOSPHORUS, ppm	55	VH		P_2O_5 - PHOSPHATE	0	
POTASSIUM	550	VH		K_2O - POTASH	0	
CALCIUM, meq/100g	10.4	M		CALCIUM	0	
MAGNESIUM, meq/100g	5.9	VH		MAGNESIUM	0	
SULFATE-S, ppm	24	M		SULFATE - SULFUR	25	
ZINC, ppm	1.4	M		ZINC	6	
IRON, ppm	3.5	L		IRON	0	
MANGANESE, ppm	3.0	L		MANGANESE	3	
COPPER, ppm	0.9	M		COPPER	0	
BORON, ppm	1.60	H		BORON	0	
SOIL TEXTURE	See Table		See Table	ELEMENTAL SULFUR	100	

BEAR RIVER VALLEY CO-OP 103 435/744-2

4780 W. 2800 N. Report No.: 98

CORINNE UT 84307 Date Received: 12/1

GROWER: NOO SUN DAIRY Date Reported: 12/18/15 Soil

Test Data	Sample 1		Sample 2		Sample 1	Sample 2
pH	8.4	H		SAMPLE IDENTITY	[redacted], mmhos/cm	
CEC, meq/100g	20.1	H		Past Crop T/Acre	NONE GIVEN EXCESS LIME,	
ORGANIC MATTER,%	2.48	M		PREV. APPLIED NUTRIENTS	0	
ORGANIC N, lb/Acre	90	M		**RECOMMENDATIONS , lbs or Units Actual Nutrients per Acre**		
AMMONIUM-N,ppm	2.5	VL				
NITRATE-N, ppm	49	VH		NITROGEN	65	
PHOSPHORUS, ppm	77	VH		P_2O_5 - PHOSPHATE	0	
POTASSIUM	765	VH		K_2O - POTASH	0	
CALCIUM, meq/100g	10.6	L		CALCIUM	0	
MAGNESIUM, meq/100g	5.8	VH		MAGNESIUM	0	
SULFATE-S, ppm	75	VH		SULFATE - SULFUR	0	
ZINC, ppm	4.4	V		ZINC	0	
IRON, ppm	3.6	L		IRON	0	
MANGANESE, ppm	3.2	M		MANGANESE	0	
COPPER, ppm	1.7	H		COPPER	0	
BORON, ppm	2.10	H		BORON	0	
SOIL TEXTURE	See Table		See Table	ELEMENTAL SULFUR	200	

BEAR RIVER VALLEY CO-OP 103 435/744-2

4780 W. 2800 N. Report No.: 98

CORINNE UT 84307 Date Received: 12/1

GROWER: NOO SUN DAIRY Date Reported: 12/18/15 Soil

Test Data	Sample 1		Sample 2		Sample 1	Sample 2
pH	8.3	H		SAMPLE IDENTITY	2, 3	
SALTS, mmhos/cm	0.9	L		CROP	FIELD CORN CHLORIDES, p	
CEC, meq/100g	17.6	M		Past Crop T/Acre	NONE GIVEN EXCESS LIME,	
ORGANIC MATTER,%	1.21	M		PREV. APPLIED NUTRIENTS	0	
ORGANIC N, lb/Acre	50	M		**RECOMMENDATIONS , lbs or Units Actual Nutrients per Acre**		
AMMONIUM-N,ppm	2.0	VL				
NITRATE-N, ppm	17	M		NITROGEN	200	
PHOSPHORUS, ppm	17	M		P_2O_5 - PHOSPHATE	110	
POTASSIUM	375	H		K_2O - POTASH	0	
CALCIUM, meq/100g	10.7	M		CALCIUM	0	
MAGNESIUM, meq/100g	5.1	VH		MAGNESIUM	0	
SULFATE-S, ppm	30	H		SULFATE - SULFUR	20	
ZINC, ppm	0.6	L		ZINC	9	
IRON, ppm	3.9	L		IRON	0	
MANGANESE, ppm	2.6	L		MANGANESE	3	
COPPER, ppm	0.8	M		COPPER	0	
BORON, ppm	0.90	M		BORON	0	
SOIL TEXTURE	See Table		See Table	ELEMENTAL SULFUR	100	

NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

NUTRIENT MANAGEMENT

(Ac.)

CODE 590

DEFINITION

Managing the amount (rate), source, placement (method of application), and timing of plant nutrients and soil amendments.

PURPOSE

- To budget, supply, and conserve nutrients for plant production.
- To minimize agricultural nonpoint source pollution of surface and groundwater resources.
- To properly utilize manure or organic by-products as a plant nutrient source.
- To protect air quality by reducing odors, nitrogen emissions (ammonia, oxides of nitrogen), and the formation of atmospheric particulates.
- To maintain or improve the physical, chemical, and biological condition of soil.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all lands where plant nutrients and soil amendments are applied. This standard does not apply to one-time nutrient applications to establish perennial crops.

CRITERIA

General Criteria Applicable to All Purposes

A nutrient budget for nitrogen, phosphorus, and potassium must be developed that considers all potential sources of nutrients including, but not limited to, green manures, legumes, crop residues, compost, animal manure, organic by-products, biosolids, waste water, organic matter, soil biological activity, commercial fertilizer, and irrigation water.

Enhanced efficiency fertilizers, used in Utah must be defined by the Association of American Plant Food Control Officials (AAPFCO) and be accepted for use by
Robert L. Hougaard Utah Department of Agriculture and Food 350 N. Redwood Rd. PO Box 146500 Salt Lake City, UT 84114-6500 Phone: (801) 538-7187 who is the State fertilizer control official, with responsibility for verification of product guarantees, ingredients (by AAPFCO definition) and label claims.

For nutrient risk assessment policy and procedures see Title 190, General Manual (GM), Part 402, Nutrient Management, and Title 190, National Instruction (NI), Part 302, Nutrient Management Policy Implementation.

To avoid salt damage, the rate of applied nitrogen and potassium in starter fertilizer must be consistent with Utah State University guidelines; The Utah Fertilizer Guidehttp://extension.usu.edu/files/publications/publication/AG_431.pdf Page 23. The NRCS-approved nutrient risk assessment for nitrogen must be completed on all source protection zones identified by the State of Utah Department of Environmental Quality Division of Drinking Water. NRCS Field offices have access to this GIS database layer . Contact Ryan Pierce at NRCS for specific maps and updates.

The NRCS-approved nutrient risk assessment for phosphorus must be completed when:

- phosphorus application rate exceeds Utah State University fertility rate guidelines for the planned crop(s), or
- the planned area is within a phosphorus- impaired watershed (contributes to 303d-listed water bodies), or
- where NRCS and the State of Utah Division of Water Quality have not determined specific conditions where the risk of phosphorus loss is low.

A phosphorus risk assessment will not be required when the State NRCS, with concurrence of the State of Utah Division of Water Quality, has determined specific conditions where the risk of phosphorus loss is low. These fields must have a documented agronomic need for phosphorus; based on soil test phosphorus (STP) and Utah State University nutrient recommendations. When Nutrient Management 590 is planned, all fields will be rated using Utah's Manure Application Risk Index UMARI.
On organic operations, the nutrient sources and management must be consistent with the USDA's National Organic Program.

Areas contained within minimum application setbacks (e.g., sinkholes, wellheads, gullies, ditches, or surface inlets) must receive nutrients consistent with the setback restrictions listed in the Utah Manure Application Risk Index.

Applications of irrigation water must minimize the risk of nutrient loss to surface and groundwater.

Soil pH must be maintained in a range that enhances an adequate level for crop nutrient availability and utilization. Refer to Utah Fertilizer Guide:
http://extension.usu.edu/files/publications/publication/AG_431.pdf**Soil, Manure, and Tissue Sampling and Laboratory Analyses (Testing).**

Nutrient planning must be based on current soil, manure, and (where used as supplemental information) tissue test results developed in accordance with Utah State University guidance, or industry practice.(reference material – list here

Current soil tests are those that are no older than one year for annual crops or 3 years for perennial crops, The area represented by a soil test must be that acreage recommended by Utah State University.

Where a conservation management unit (CMU) is used as the basis for a sampling unit, all acreage in the CMU must have similar soil type, cropping history, and management The soil and tissue tests must include analyses pertinent to monitoring or amending the annual nutrient budget, e.g., pH, electrical conductivity (EC) and sodicity where salts are a concern, soil

organic matter, phosphorus, potassium, or other nutrients and test for nitrogen where applicable.

Guidelines from the Utah Fertilizer Guide will be used for sampling
http://extension.usu.edu/files/publications/publication/AG_431.pdf.

Soil test analyses must be performed by laboratories successfully meeting the requirements and performance standards of the North American Proficiency Testing Program-Performance Assessment Program (NAPT-PAP) under the auspices of the Soil Science Society of America (SSSA) and NRCS, or other NRCS-approved program that considers laboratory performance and proficiency to assure accuracy of soil test results NAPT can be found here:

http://www.naptprogram.org/about/participants

Nutrient values of manure, organic by-products and biosolids must be determined prior to land application.

Manure analyses must include, at minimum, total nitrogen (N), ammonium N, total phosphorus (P) or P_2O_5, total potassium (K) or K_2O, and percent solids, or Utah State University guidance regarding required analyses.

Manure, organic by-products, and biosolids samples must be collected and analyzed at least annually, or more frequently if needed to account for operational changes (feed management, animal type, manure handling strategy, etc.) impacting manure nutrient concentrations. If no operational changes occur, less frequent manure testing is allowable where operations can document a stable level of nutrient concentrations for the preceding three consecutive years, unless federal, State, or local regulations require more frequent testing.

Samples must be collected, prepared, stored, and shipped, following Utah State University guidance or industry practice.

When planning for new or modified livestock operations, acceptable "book values" recognized by the NRCS (e.g., NRCS Agricultural Waste Management Field Handbook) and Utah State University, or analyses from similar operations in the geographical area, may be used if they accurately estimate nutrient output from the proposed operation.

Manure testing analyses must be performed by laboratories successfully meeting the requirements and performance standards of the Manure Testing Laboratory Certification program (MTLCP) under the auspices of the Minnesota Department of Agriculture, http://www2.mda.state.mn.us/webapp/lis/manurelabs.jsp

or other NRCS- approved program that considers laboratory performance and proficiency to assure accurate manure test results.

Nutrient Application Rates.

Planned nutrient application rates for nitrogen, phosphorus, and potassium must not exceed Utah State University guidelines or industry practice when recognized by the university.

At a minimum, determination of rate must be based on crop/cropping sequence, current soil test results, realistic yield goals, and NRCS- approved nutrient risk assessments.

If the land-grant university does not provide specific guidance that meets these criteria, application rates must be based on plans that consider realistic yield goals and associated plant nutrient uptake rates.

Realistic yield goals must be established based on historical yield data, soil productivity information, climatic conditions, nutrient test results, level of management, and local research results considering comparable production conditions.

Estimates of yield response must consider factors such as poor soil quality, drainage, pH, salinity, etc., prior to assuming that nitrogen and/or phosphorus are deficient.

For new crops or varieties, industry- demonstrated yield, and nutrient utilization information may be used until Utah State University information is available.

Lower-than-recommended nutrient application rates are permissible if the grower's objectives are met.

Applications of biosolids, starter fertilizers, or pop-up fertilizers must be accounted for in the nutrient budget.

Nutrient Sources.

Nutrient sources utilized must be compatible with the application timing, tillage and planting system, soil properties, crop, crop rotation, soil organic content, and local climate to minimize risk to the environment.

Nutrient Application Timing and Placement.

Timing and placement of all nutrients must correspond as closely as practical with plant nutrient uptake (utilization by crops), and consider nutrient source, cropping system limitations, soil properties, weather conditions, drainage system, soil biology, and nutrient risk assessment results.

Nutrients must not be surface-applied if nutrient losses offsite are likely. This precludes spreading on:

- frozen and/or snow-covered soils, and
- when the top 2 inches of soil are saturated from rainfall or snow melt.

Exceptions for the above criteria can be made for surface-applied manure when the Utah Manure Application Risk Index is used and the risk is "Low". Additional Criteria to Minimize Agricultural Nonpoint Source Pollution of Surface and Groundwater

Planners must use the current Utah Manure Application Risk Index.

When there is a high risk of transport of nutrients, conservation practices must be coordinated to avoid, control, or trap manure and nutrients before they can leave the field by surface or subsurface drainage (e.g., tile). The number of applications and the application rates must also be considered to limit the transport of nutrients to tile drains.

Nutrients must be applied with the right placement, in the right amount, at the right time, and from the right source to minimize nutrient losses to surface and groundwater. The following nutrient use efficiency strategies or technologies must be considered:

- slow and controlled release fertilizers
- nitrification and urease inhibitors
- enhanced efficiency fertilizers
- incorporation or injection
- timing and number of applications
- soil nitrate and organic N testing
- coordinate nutrient applications with optimum crop nutrient uptake
- Corn Stalk Nitrate Test (CSNT), Pre-Sidedress Nitrate Test (PSNT), and Pre-Plant Soil Nitrate Test (PPSN)
- tissue testing, chlorophyll meters, and spectral analysis technologies
- other land-grant university recommended technologies that improve nutrient use efficiency and minimize surface or groundwater resource concerns.

Additional Criteria Applicable to Properly Utilize Manure or Organic By-Products as a Plant Nutrient Source

When manures are applied, and soil salinity is a concern, salt concentrations must be monitored to prevent potential crop damage and/or reduced soil quality.

The total single application of liquid manure:

- must not exceed the soil's infiltration or water holding capacity
- be based on crop rooting depth
- must be adjusted to avoid runoff or loss to subsurface tile drains.

Crop production activities and nutrient use efficiency technologies must be coordinated to take advantage of mineralized plant-available nitrogen to minimize the potential for nitrogen losses due to denitrification or ammonia volatilization.

Nitrogen and phosphorus application rates must be planned based on risk assessment results as determined by the Utah Manure Application Risk Index.

- Manure or organic by-products may be applied on legumes at rates equal to the estimated removal of nitrogen in harvested plant biomass, not to exceed Utah State University recommendations.

Manure may be applied at a rate equal to the recommended phosphorus application, or estimated phosphorus removal in harvested plant biomass for the crop rotation, or multiple years in the crop sequence at one time. When such applications are made, the application rate must not exceed the acceptable phosphorus risk assessment criteria, must not exceed the recommended nitrogen application rate during the year of application or harvest cycle, and no additional phosphorus must be applied in the current year and any additional years for which the single application of phosphorus is supplying nutrients.

Additional Criteria to Protect Air Quality by Reducing Odors, Nitrogen Emissions and the Formation of Atmospheric Particulates

To address air quality concerns caused by odor, nitrogen, sulfur, and/or particulate emissions; the source, timing, amount, and placement of nutrients must be adjusted to minimize the negative impact of these emissions on the environment and human health. One or more of the following may be used:

- slow or controlled release fertilizers
- nitrification inhibitors
- urease inhibitors
- nutrient enhancement technologies
- incorporation
- injection
- stabilized nitrogen fertilizers
- residue and tillage management
- no-till or strip-till
- other technologies that minimize the impact of these emissions

Do not apply poultry litter, manure, or organic by-products of similar dryness/density when there is a high probability that wind will blow the material offsite.

Additional Criteria to Improve or Maintain the Physical, Chemical, and Biological Condition of the Soil to Enhance Soil Quality for Crop Production and Environmental Protection

Time the application of nutrients to avoid periods when field activities will result in soil compaction.

In areas where salinity is a concern, select nutrient sources that minimize the buildup of soil salts.

CONSIDERATIONS

Elevated soil test phosphorus levels are detrimental to soil biota. Soil test phosphorus levels should not exceed State-approved soil test thresholds established to protect the environment.

Use no-till/strip-till in combination with cover crops to sequester nutrients, increase soil organic matter, increase aggregate stability, reduce compaction, improve infiltration, and enhance soil biological activity to improve nutrient use efficiency.

Use nutrient management strategies such as cover crops, crop rotations, and crop rotations with perennials to improve nutrient cycling and reduce energy inputs.

Use variable-rate nitrogen application based on expected crop yields, soil variability, soil nitrate or organic N supply levels, or chlorophyll concentration.

Use variable-rate nitrogen, phosphorus, and potassium application rates based on site-specific variability in crop yield, soil characteristics, soil test values, and other soil productivity factors.

Develop site-specific yield maps using a yield monitoring system. Use the data to further diagnose low- and high- yield areas, or zones, and make the necessary management changes. See Title 190, Agronomy Technical Note (TN) 190.AGR.3, Precision Nutrient Management Planning.

Use manure management conservation practices to manage manure nutrients to limit losses prior to nutrient utilization.

Apply manure at a rate that will result in an "improving" Soil Conditioning Index (SCI) without exceeding acceptable risk of nitrogen or phosphorus loss.

Use legume crops and cover crops to provide nitrogen through biological fixation and nutrient recycling.

Modify animal feed diets to reduce the nutrient content of manure following guidance contained in Conservation Practice Standard (CPS) Code 592, Feed Management.

Soil test information should be no older than 1 year when developing new plans.

Excessive levels of some nutrients can cause induced deficiencies of other nutrients, e.g., high soil test phosphorus levels can result in zinc deficiency in corn.

Use soil tests, plant tissue analyses, and field observations to check for secondary plant nutrient deficiencies or toxicity that may impact plant growth or availability of the primary nutrients.

Use the adaptive nutrient management learning process to improve nutrient use efficiency on farms as outlined in the NRCS' National Nutrient Policy in GM 190, Part 402, Nutrient Management.

Potassium should not be applied in situations where an excess (greater than soil test potassium recommendation) causes nutrient imbalances in crops or forages.

Workers should be protected from and avoid unnecessary contact with plant nutrient sources. Extra caution must be taken when handling anhydrous ammonia or when dealing with organic wastes stored in unventilated enclosures.

Material generated from cleaning nutrient application equipment should be utilized in an environmentally safe manner. Excess material should be collected and stored or field applied in an appropriate manner.

Nutrient containers should be recycled in compliance with State and local guidelines or regulations.

Considerations to Minimize Agricultural Nonpoint Source Pollution of Surface and Groundwater.

Use conservation practices that slow runoff, reduce erosion, and increase infiltration, e.g., filter strip, contour farming, or contour buffer strips. These practices can also reduce the loss of nitrates or soluble phosphorus.

Use application methods and timing strategies that reduce the risk of nutrient transport by ground and surface waters, such as:

- split applications of nitrogen to deliver nutrients during periods of maximum crop utilization,
- banded applications of nitrogen and/or phosphorus to improve nutrient availability,
- drainage water management to reduce nutrient discharge through drainage systems, and
- incorporation of surface-applied manures or organic by-products if precipitation capable of producing runoff or erosion is forecast within the time of planned application.

Use the agricultural chemical storage facility conservation practice to protect air, soil, and water quality.

Use bioreactors and multistage drainage strategies when approved by Utah State University.

Considerations to Protect Air Quality by Reducing Nitrogen and/or Particulate Emissions to the Atmosphere.

Avoid applying manure and other by-products upwind of inhabited areas.

Use high-efficiency irrigation technologies (e.g., reduced-pressure drop nozzles for center pivots) to reduce the potential for nutrient losses.

PLANS AND SPECIFICATIONS

The following components must be included in the nutrient management plan:

- aerial site photograph(s)/imagery or site map(s), and a soil survey map of the site,
- soil information including: soil type surface texture, pH, drainage class, permeability, available water capacity, depth to water table, restrictive features, and flooding and/or ponding frequency,
- location of designated sensitive areas and the associated nutrient application restrictions and setbacks,
- for manure applications, location of nearby residences, or other locations where humans may be present on a regular basis, and any identified meteorological (e.g., prevailing winds at different times of the year), or topographical influences that may affect the transport of odors to those locations,
- results of approved risk assessment tools for nitrogen, phosphorus, and erosion losses,
- documentation establishing that the application site presents low risk for phosphorus transport to local water when phosphorus is applied in excess of crop requirement.
- current and/or planned plant production sequence or crop rotation,
- soil, water, compost, manure, organic by-product, and plant tissue sample analyses applicable to the plan,
- when soil phosphorus levels are increasing, include a discussion of the risk associated with phosphorus accumulation and a proposed phosphorus draw-down strategy,
- realistic yield goals for the crops,
- complete nutrient budget for nitrogen, phosphorus, and potassium for the plant production sequence or crop rotation,
- listing and quantification of all nutrient sources and form,
- all enhanced efficiency fertilizer products that are planned for use,
- in accordance with the nitrogen and phosphorus risk assessment tool(s), specify the recommended nutrient application source, timing, amount (except for precision/variable rate applications specify method used to determine rate), and placement of plant nutrients for each field or management unit, and
- guidance for implementation, operation and maintenance, and recordkeeping.

In addition, the following components must be included in a precision/variable rate nutrient management plan:

- Document the geo-referenced field boundary and data collected that was processed and analyzed as a GIS layer or layers to generate nutrient or soil amendment recommendations.
- Document the nutrient recommendation guidance and recommendation equations used to convert the GIS base data layer or layers to a nutrient source material recommendation GIS layer or layers.
- Document if a variable rate nutrient or soil amendment application was made.

- Provide application records per management zone or as applied map within individual field boundaries (or electronic records) documenting source, timing, method, and rate of all applications that resulted from use of the precision agriculture process for nutrient or soil amendment applications.

- Maintain the electronic records of the GIS data layers and nutrient applications for at least 5 years.

If increases in soil phosphorus levels are expected (i.e., when N-based rates are used), the nutrient management plan must document:

- the soil phosphorus levels at which it is desirable to convert to phosphorus based planning,
- the potential plan for soil test phosphorus drawdown from the production and harvesting of crops, and
- management activities or techniques used to reduce the potential for phosphorus transport and loss,
- for AFOs, a quantification of manure produced in excess of crop nutrient requirements, and
- a long-term strategy and proposed implementation timeline for reducing soil P to levels that protect water quality,

CERTIFICATION REQUIREMENTS

The data listed below is necessary at a minimum to document that the completed practice meets the standard and specification:

1. How the producer has adopted the management and mitigating practices listed on the UMARI
2. Nutrient application records that show nutrients were applied according to the soil test and/or plant tissue test
3. Soil test and other test results (i.e. plant tissue test, manure test), where appropriate
4. Crop(s) grown and yield records
5. Timing and method of application
6. Map indicating acres treated

OPERATION AND MAINTENANCE

Conduct periodic plan reviews to determine if adjustments or modifications to the plan are needed. At a minimum, plans must be reviewed and revised, as needed with each soil test cycle, changes in manure volume or analysis, crops, or crop management.

Fields receiving animal manures and/or biosolids must be monitored for the accumulation of heavy metals and phosphorus in accordance with land- grant university guidance and State law.

Significant changes in animal numbers, management, and feed management will necessitate additional manure analyses to establish a revised average nutrient content.

Calibrate application equipment to ensure accurate distribution of material at planned rates.

Document the nutrient application rate. When the applied rate differs from the planned rate, provide appropriate documentation for the change.

Records must be maintained for at least 5 years to document plan implementation and maintenance. As applicable, records include:

- soil, plant tissue, water, manure, and organic by-product analyses resulting in recommendations for nutrient application,

- quantities, analyses and sources of nutrients applied,
- dates, and method(s) of nutrient applications, source of nutrients, and rates of application,
- weather conditions and soil moisture at the time of application; lapsed time to manure incorporation; rainfall or irrigation event,
- crops planted, planting and harvest dates, yields, nutrient analyses of harvested biomass, and crop residues removed,
- dates of plan review, name of reviewer, and recommended changes resulting from the review, and
- all enhanced efficiency fertilizer products used.

Additional records for precision/variable rate sites must include:

- maps identifying the variable application source, timing, amount, and placement of all plant nutrients applied, and
- GPS-based yield maps for crops where yields can be digitally collected.

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